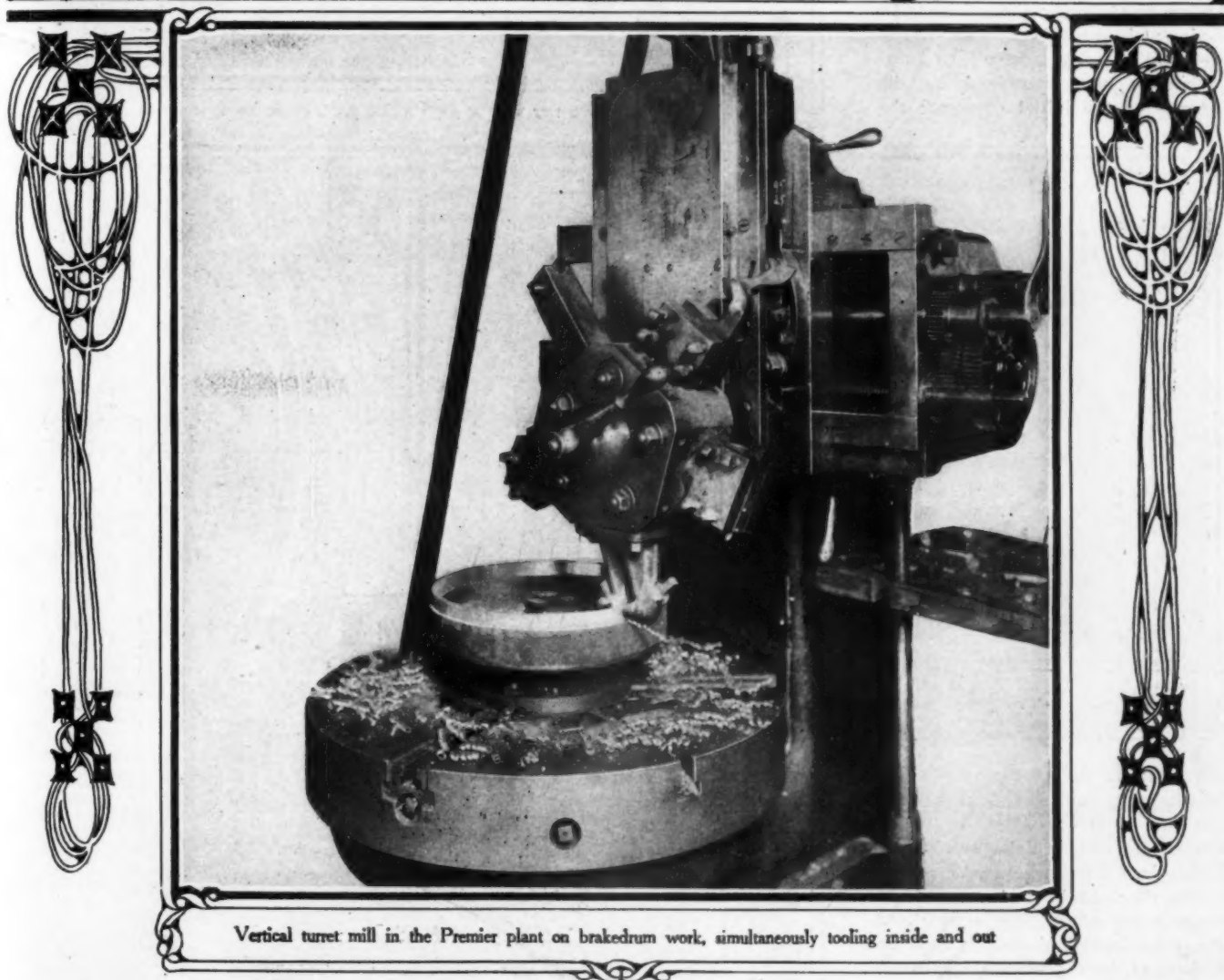


THE AUTOMOBILE

Duplication Methods Supreme



Vertical turret mill in the Premier plant on brakedrum work, simultaneously tooling inside and out

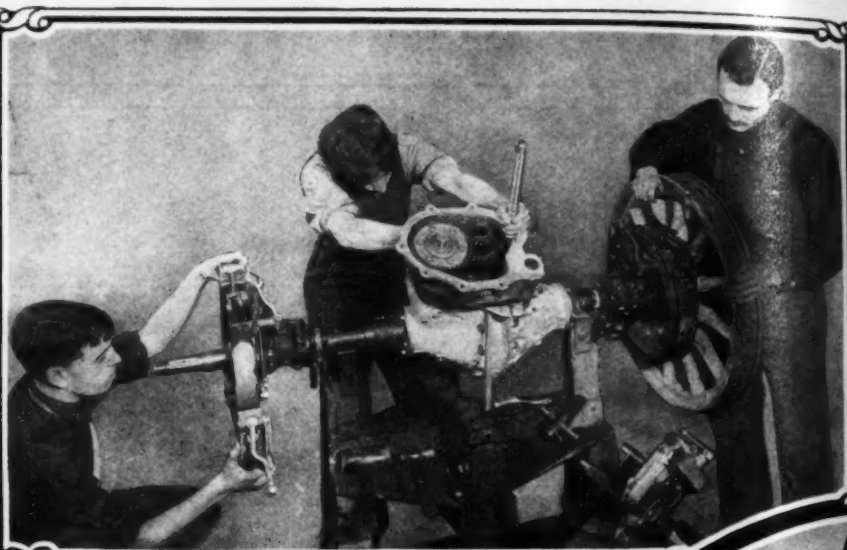
TEN YEARS of persistent effort on the part of American automobile builders, beginning in sharp competition with the foreign makers of cars, has resulted in the final supremacy of the methods involving the duplication of parts as practiced in American shops as against the methods demanding employment of a surfeit of labor, more or less skilled to be sure, but unguided by processing pictures and special machine tools of the character that compel uniformity. But it was not the primal idea of American makers to struggle against foreign competition; every skilled shop manager in this country is fully alive to the enormous handicap that anchors the foreign shops to an ancient

precedent that puts a bar on quantity production, rendering it impossible for all such makers to consider, even for a moment, the enormous initial investment that must be made ere quantity production on a duplicating basis can be recognized as a reality.

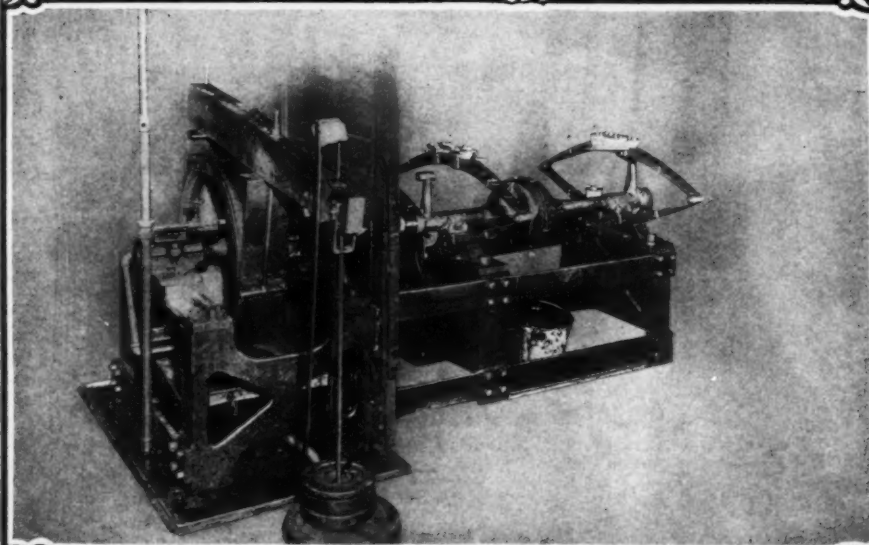
During the formative period in American plants the output of automobiles suffered somewhat in comparison with importations of cars. Those who failed to see the dawn of the real automobile of the future were led to believe that foreign cars were better; that the materials were more suitable, the designs more scientific, and the workmanship on a higher plane. Purchasers of these automobiles found that they would not last forever, and

when they went to the makers for repair parts they were astounded at the enormous cost thereof; but that was not all. It seemed strange to these purchasers that the parts as purchased, despite the beauty of their finish, would not go into place without being tinkered with, and they finally found out what every American builder predicted, *i.e.*, no two workmen, no matter how skilled they may be, will ever succeed in making two parts and have them on a duplicating basis.

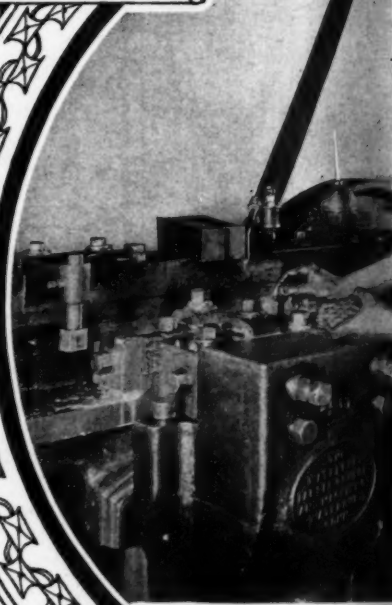
It was soon discovered that the mere purchasing of a well-made automobile was not the whole story. The quality of a car will only be known to the buyer thereof after he finds out how much the maintenance cost will be. The price of an automobile is not determined by the amount of the initial payment; the



Assembling live rear axles at the Packard plant, employing three sets of men with military precision

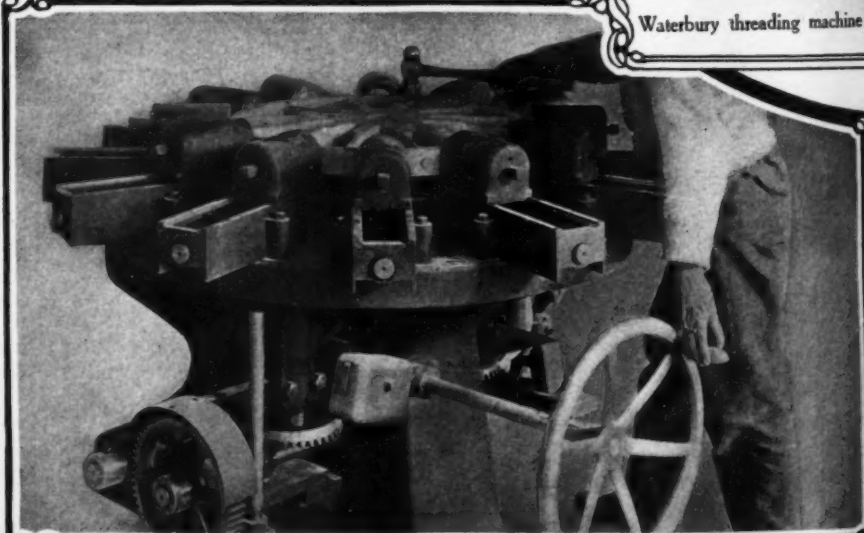


Prony brake test of live rear axle taken at the Franklin plant

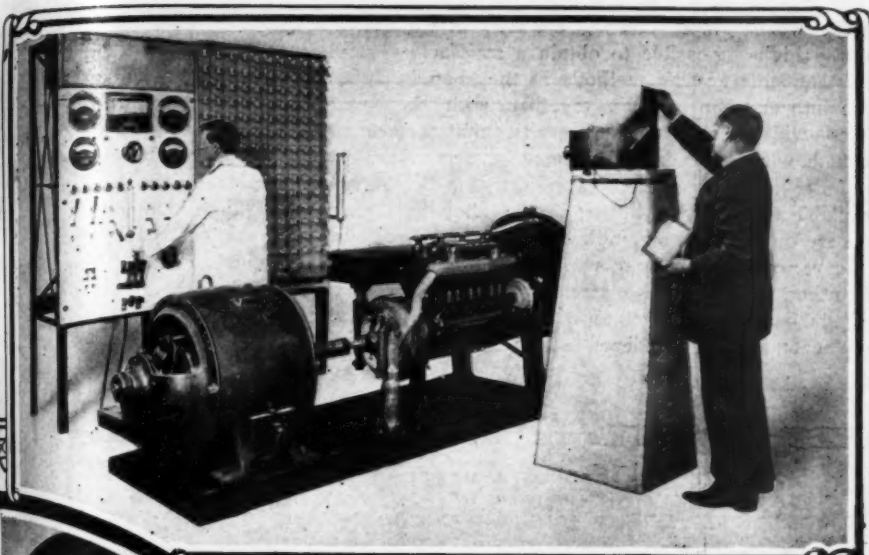


Waterbury threading machine in

real cost, in fact, is a matter of bookkeeping, and the final balance can only be struck when the life of the car is ended. The patrons of high-priced hand-made automobiles, while they could not have been purse-proud after they settled for the cars, looked down upon those who were far-sighted enough to go in for machine-made American automobiles for even a whole year after they took title to their rather nice-looking creations. The surprise came when repair accounts were put into contrast with each other. The less pretentious American automobiles naturally looked better after a year of service because it was possible to keep them in a state of good repair with the money that was still hiding in the purchaser's pocketbook after title was taken to the car. The cost



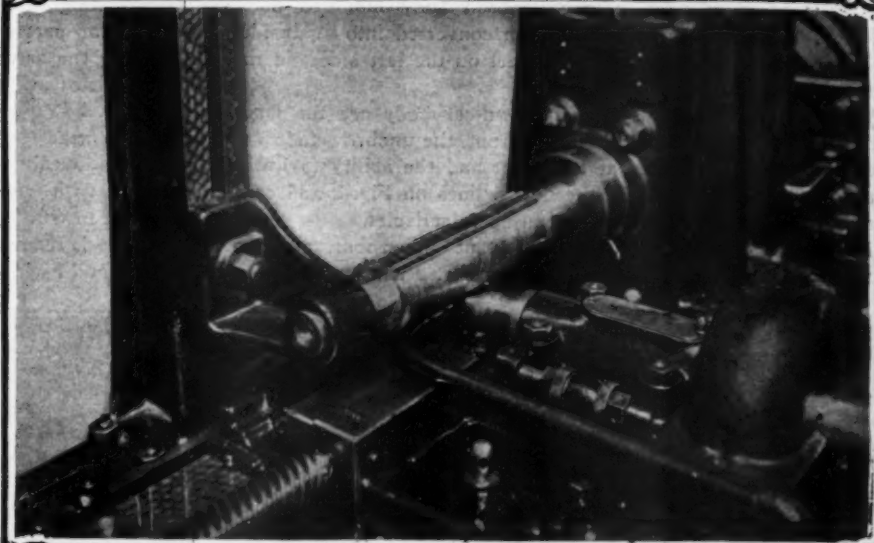
Wheel building at the Packard plant, showing the method of assembling the woodwork



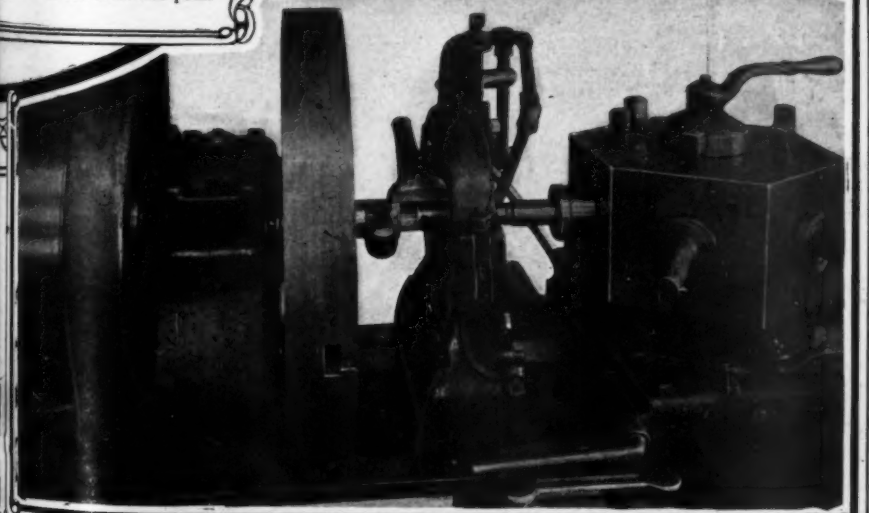
Motor testing in the Rambler plant, showing the Purdy manograph on a pedestal to the right



operation at the Maxwell plant



Could and Eberhardt gear cutter, cutting 17 blanks at one setting in the Brush plant



Example of turret lathe work in the Pierce-Arrow plant—finishing alloy steel knuckles

of maintenance was also within bounds, due to the uniform method of manufacture, but it will be a fallacy to overlook the great main consideration, *i.e.*, the cost of substituting repair for worn-out parts is nominal if the parts are made on a duplicating basis, whereas it is enormous if the parts are whittled out by hand and have to be reconstructed in the garage repair shop.

The history of the automobile, almost from its inception, due to the influence of the makes of cars that are not on a duplicating basis, is punctuated with intense dissatisfaction on account of the enormous garage expenses that have confronted automobilists. This problem has never been a serious one for the autoist who had the foresight to buy the kind of car that is made in a properly equipped plant, fitted out

with machine tools of the character that cannot be used at all unless they produce parts on a duplicating basis.

In order to properly elucidate the point that is to be made here, illustrations of just a few of the leading shop processes are presented in which it will be observed that the workman is a mere spectator during the time that the operations are being performed by the machine tools. There is only one way by which a workman can be tolerated in a plant where parts are made on a duplicating basis, and that is, when he plays the part of a spectator only, excepting that he must be there in time to stop the machine when the work is done, replacing the same with new work, after which he again becomes a spectator, and is free to study algebra, if he like; lament over his past mis-

deeds, figure on the world's series or build castles in Spain.

Of the unexplained difficulties involved in automobile work, experts have said very little to clear up the reasons why high-priced man-made cars wear out too soon. A broad statement of the underlying facts would, of course, have to take into account the expenditure of energy—in other words, losses—which much necessarily follow if the component parts are not made with precision and if the fits are poor. In the illustration of the live rear axle test at the Franklin plant the facilities are available for determining whether or not the live rear axles as made are on a duplicating basis, because since the parts come from the various departments *en masse*, they must be in replica of each other, or the assemblages will be faulty, and the brake test will show an excess of power taken and dissipated in the form of heat; in

other words, the friction load will be too high. Without the motor testing methods at the Rambler plant it would be impossible to obtain a satisfactory result in the absence of duplicating methods in the shop because the electrical devices used in testing, together with the manograph check, would disclose the incongruities that are ever present when workmen alone are depended upon for accuracy. Other illustrations convey the impression of rigidity of the machine tools, as in the Pierce-Arrow illustration of alloy steel knuckle finishing. Other illustrations indicate multiple operations by means of which the quantity of work turned out is rendered sufficient to make it pay, as in the assembling of Packard axles, utilizing three sets of men simultaneously, they working with military precision, each gang independent of the other.

Inside-Drive Coupe Landaulet

GEORGE J. MERCER SHOWS IN DETAIL HOW THIS TYPE OF BODY MAY BE APPLIED TO A MITCHELL TAXICAB CHASSIS

IN the accompanying illustrations are shown in detail the construction of a four-passenger closed body mounted on a Mitchell taxicab chassis that has been converted into an inside-driven machine with the steering wheel on the left side and the change levers in the center.

The advantages of this type of town-car body are the large amount of light on the sides and the front, the unobstructed view from the rounded corners at the front and the ability to lower the rear part as indicated by the dotted lines on Fig. 2 and convert the body into the regulation semi-open landaulet.

Figs. 2, 3, 4 and 5 show the important dimensions, and the scale as presented along the base line on Fig. 2 will be a medium

by which the other dimensions required can be quickly ascertained.

The seating is for four adults or three besides the operator. The cushion part of the operator's seat is made to tilt up as indicated by the arrow marks and the dotted lines on Fig. 2; this will permit of access from either side. The back of this seat is stationary, however, and the seat has the necessary stiffness and security to satisfy the driver.

This body can be made either with wood frame and metal panels or with wood panels, as the design is suitable for either form of construction. At the front the glass is divided and the upper half is made to swing outward to form a visor shield, and the door and back side glass frames are made to drop.

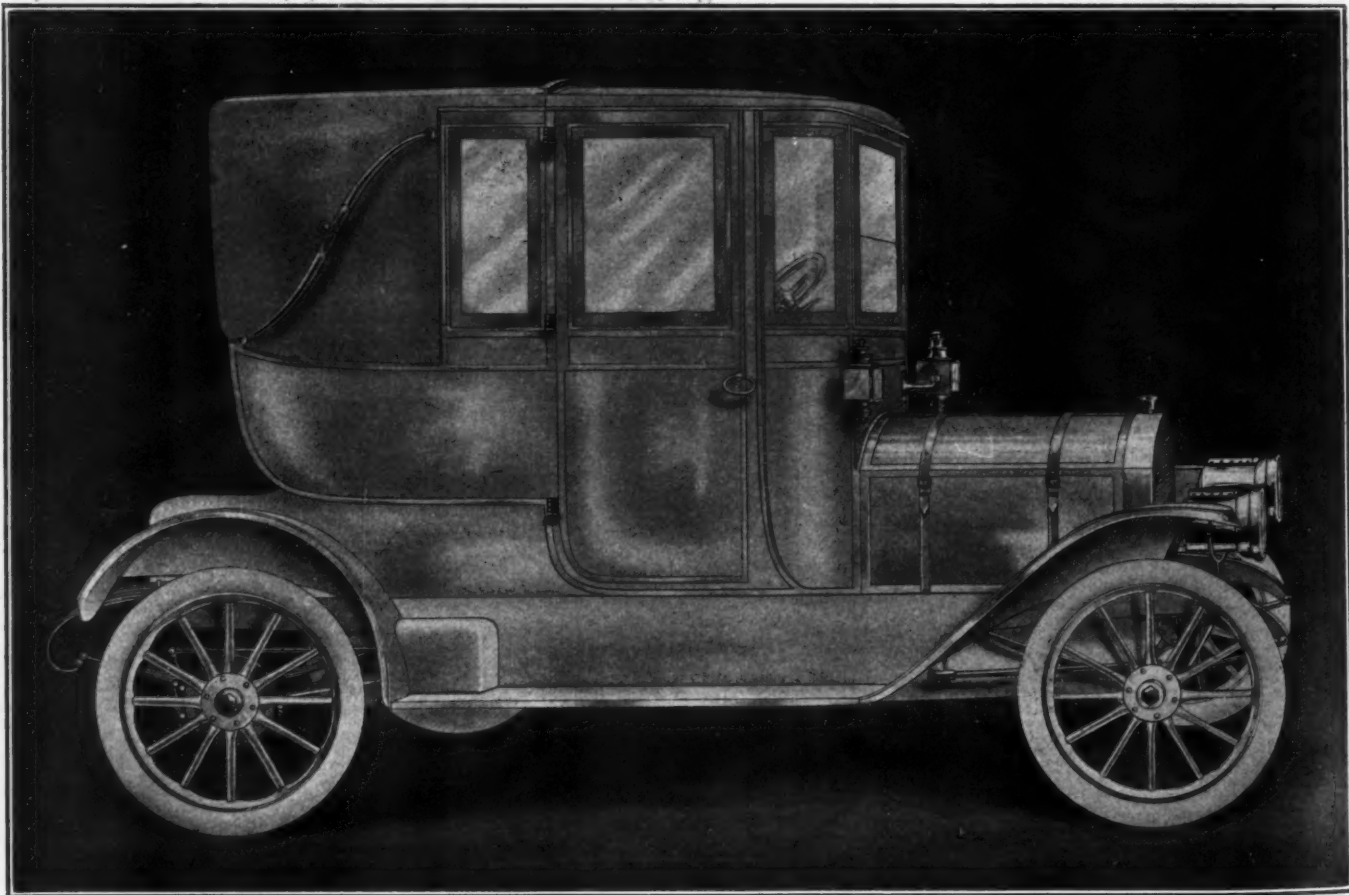
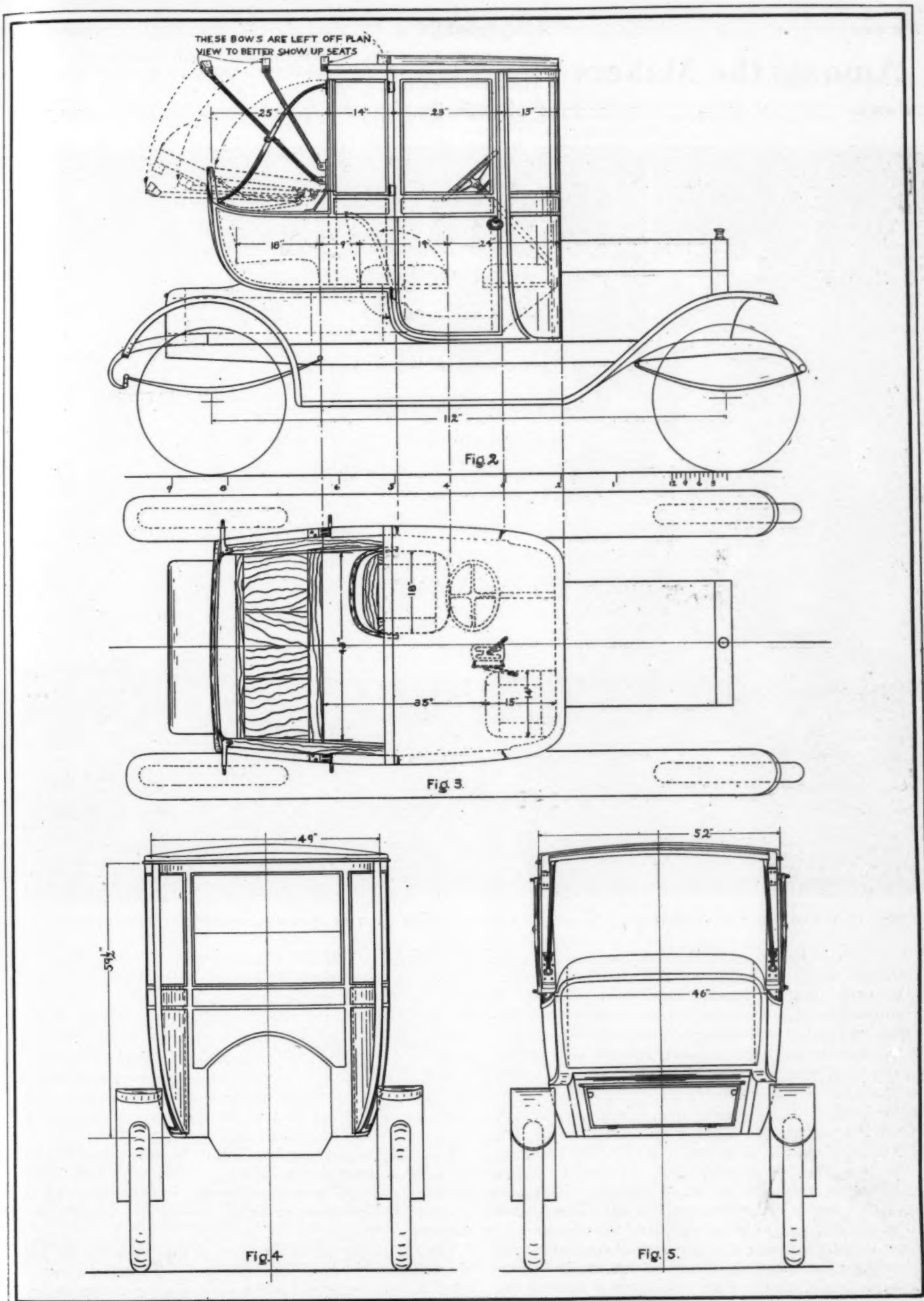
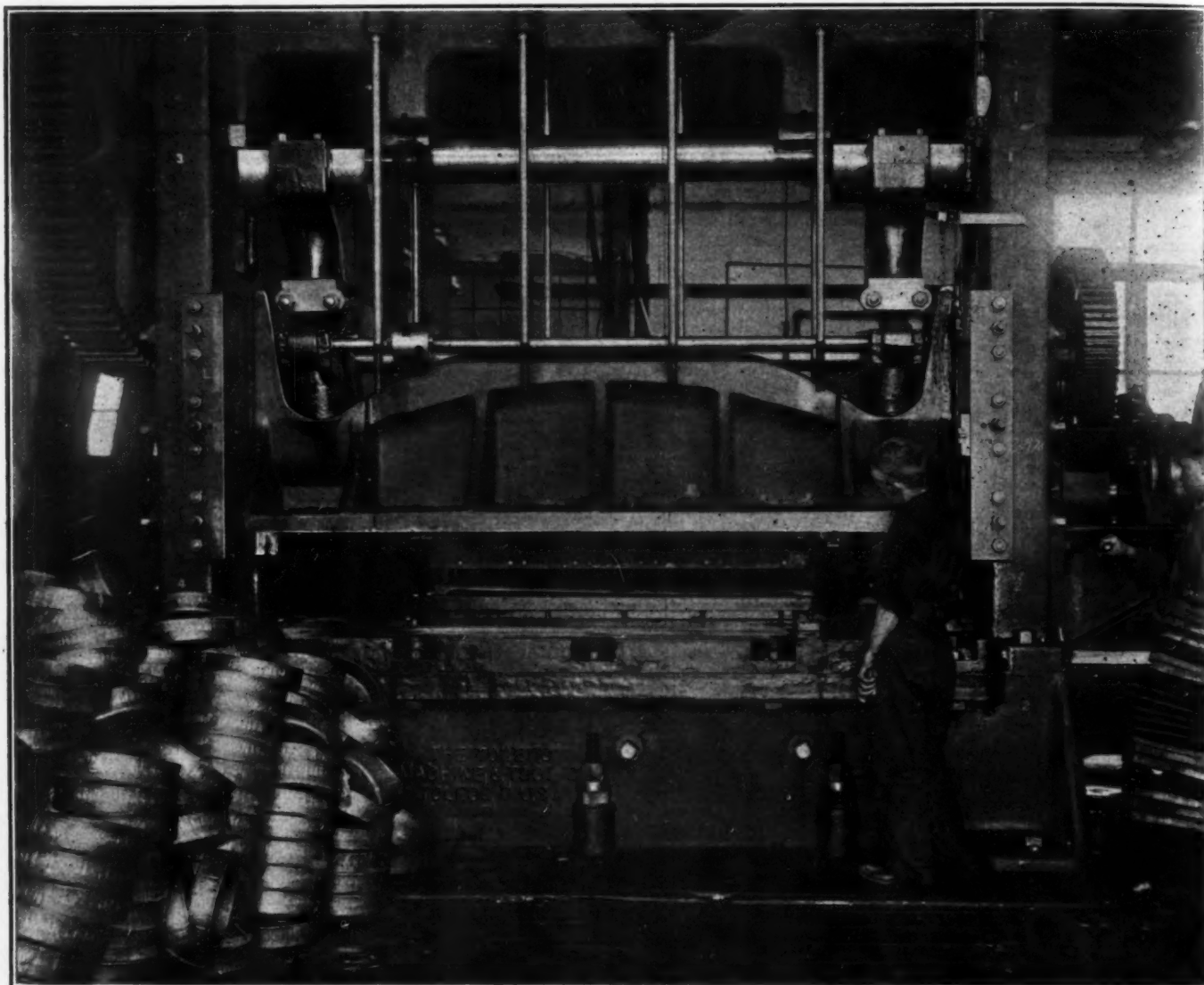


FIG. 1—SHOWING A NEW TYPE OF BODY ESPECIALLY ADAPTED TO WINTER DRIVING AND TOWN-CAR WORK



Among the Makers

EXCELLENT PROSPECTS FOR WINTER AUTOMOBILING—DETAILS OF THE 1911 CHADWICK SHOW A MATERIAL ADVANCE IN EXCELLENCE—THE NEW SPEEDWELL LINE



HOW BRAKEDRUMS ARE FORMED OUT OF SHEET STEEL—TAKEN AT THE MAXWELL PLANT AT TARRYTOWN

FOR a time it looked as if the 1911 models of automobiles would be much retarded, due to bad automobile weather last Spring and the enormous number of 1910 automobiles that were then contemplated. The present spell of good automobiling weather covers substantially the whole American continent, and this year differs from any previous year from the builders' point of view, from the fact that the demand for automobiles, ostensibly for Winter use, is greater than it ever was before. While it is true that the weather and the promise of a mild Autumn have much to do by way of encouraging automobilists, the fact remains that the new fore-door types of bodies, coupled with larger diameter wheels and better motor performance, remove the last obstacle that stood in the way of winter automobiling for pleasure.

But it is not the prospect of pleasure alone that serves as the motive for spending money on automobiles to be used in the winter time. When the snow is deepest and

the weather conditions discourage every other form of transit to an absolute shut-down, thus stagnating business and serving as the basis for great commercial loss, the automobile is the one remaining type of vehicle for transportation purposes that has within itself the inherent qualities to combat the elements and deliver the lucky owner to his place of business on time in the morning and back to his place of abode in fettle for dinner, and ready to admit that he may have saved the price of a good automobile in a single day.

Even if it is not possible to trace so large a saving in so short a time, the economic advantage is sufficiently definite to be well worth taking into account, and to this is added the pleasure of living in comfort and in contentment.

The cost of living in the manner that requires the use of an automobile is reduced to a low ebb when account is taken of the greater amount of work that the owner can do.

The Chadwick for 1911

ALL FOUR MODELS ARE MECHANICALLY IDENTICAL—
WHEELBASE OF THE RUNABOUT SHORTENED TO
FACILITATE EASY HANDLING AT HIGH SPEEDS

M ECHANICALLY and in general details of engineering design the 1911 models of the Chadwick, made by the Chadwick Engineering Works, of Pottstown, Pa., are identical, the only difference between the five- and seven-passenger types being the weight of the springs and the set of the steering gear. In the Runabout, or two-passenger model, the wheelbase has been considerably shortened to facilitate handling at high speeds and in addition it is equipped with special long-distance oil and gasoline tanks.

The Touring Car model is a 133-inch wheelbase chassis fitted with 36 x 4 tires in the front and 37 x 5 in the rear. The tonneau is large and comfortable, and the auxiliary seats when folded up occupy very small space in the tonneau. The rake of the steering gear, the finish and upholstery are all that can be desired. The standard colors are Brewster green and Chadwick red, upholstery to match. The standard equipment consists of demountable rims, tire brackets, robe rail, a foot rail, full set of tools, a 10-inch searchlight, with Prest-O-Lite tank, combination electric and oil side and tail lights, and storage battery.

There will be two Tourabout models offered. The miniature tonneau Tourabout, seating four passengers comfortably or five closely, the body design being extremely low and rakish with extreme rake to the steering gear, is furnished in Royal blue and Brewster green. Tire equipment is 36 x 4 1-2 front and rear, demountable rims. The standard Tourabout, a full five-passenger car, with detachable tonneau with double side doors, will prove unusually interesting to those who do not desire the carrying capacity of a large touring car. In this model has been accomplished that which has so long been striven for, the production of a five-passenger car which will possess the easy riding qualities of the larger model.

The Runabout model is a 112-inch wheelbase chassis and has identically the same engine as the Tourabout and Touring Car models, the only difference throughout the construction being the shortening, up to allow placing it in the shorter wheelbase. Possessing power, speed, flexibility, and ease of operation to the greatest possible extent, and having on the high gear the ability to throttle to six miles an hour with an ultimate speed of ninety miles, this car is equipped with a luxurious and carefully worked-out body whose lines are graceful, attractive and symmetrical. It is not only adapted for high speed work, but is equally available for park or city driving or long-distance touring. The carrying capacity of gasoline is 50 gallons and of lubricating oil 23 gallons, enabling one to be independent of the base of supplies.

The type-19 engine shows the following improvements and refinements. The carbureter has been increased in size; around the inlet manifold has been placed a heating attachment not only enclosing the manifold, but the heater pipe also passes directly through the center. This will enable the low grades of gasoline now obtainable on the market to be used satisfactorily, and when the car is throttled down very low on direct drive there will be no difficulty experienced from condensation of the gas in the inlet manifold. The heating arrangement is so designed that the temperature of the inlet manifold can be maintained at any point up to the temperature of the heating water, enabling it to be instantly adjusted to meet the conditions found in different parts of the country. A special flooding device and air shutter have been installed for the purpose of easy starting. The spiral advance on the magneto used in former models will be maintained, with a slight increase in size and the addition of an outboard bearing in order to reduce to a minimum the wear and lost motion, and tending to greater quietness. The inlet valves have

been largely increased in size and placed in the head of the motor, actuated by push rods and rocker arms, their connecting valve lifts being made instantly adjustable in order to insure noiseless operation. All points and working parts are carefully ground and case-hardened to insure long life. Inlet and exhaust springs are carefully faced square and have been slightly stiffened. There has been a slight increase in the size of waterjacket, due to the changing of the valve position, and the jackets in conjunction with the radiator carry nine gallons of cooling water. The pump has been placed on the left side of the engine, inserted in the oiler drive line with an Oldham coupling, and is easily removed. The oiler has been increased in capacity and is now furnished with a large filler hole, one of the small details that tend to greater satisfaction. The Herz distributor has been removed from the rear of the engine and placed in a most accessible and well-protected position on the left side, well to the front, being mounted vertically and driven from the pump line shaft and actuated by a spiral advance similar to that of the magneto. A separate set of plugs has been installed for the auxiliary system, which furnishes a complete double system of ignition and prevents trouble. The time gears are all of hardened steel, are carefully cut, and accurately ground and fitted to insure their quiet and smooth operation. The installing of hardened-steel time gears absolutely insures long life and durability.

The clutch is of the internal expanding type, actuated by a rack and pinion, and held into engagement by a very light spring pressure. The process of engagement is very smooth, being free from jerking or gripping. The flywheel is 18 inches in diameter, with six-inch face. The expanding band of the clutch is leather-faced at point of contact with flywheel. A strong feature of this clutch is the fact that by removing three nuts the band can be slipped out and the condition of the leather face examined or treated if desired, and band reinserted without disturbing in any one particular its adjustment. The foot lever operates the usual type of yoke, actuating a sleeve which carries a small rack operating a pinion and radial shaft inside of the clutch, the outer end of this clutch carrying a small crank surrounded by a hardened-steel roller. The rotation of this crank by the change of position of the clutch pedal forces the band in or out of engagement with the flywheel. There is attached to the body of the clutch a drum, and as the pedal is actuated to throw the clutch out, the small brake passes down beside the drum and prevents the clutch expanding. This brake is so designed as not to interfere with the clutch adjustment, and in case incorrect adjustment is made, it would not prevent the clutch being entirely disengaged.

The universal joint is not in the ordinary acceptance of the term a universal joint, but a flexible joint made of chrome nickel steel with pins, ball-shaped on the end, of chrome nickel steel, heat treated, the joint being respectively keyed to the drive shaft on the transmission and the connecting drive shaft between the clutch and the transmission. This joint, after many thousands of miles' operation in high-powered cars, has shown no signs of wear.

The drive shaft is of special heat-treated steel, flanged for carrying the clutch body integral.

The transmission is the Chadwick semi-selective type, three positions being located from the neutral, namely, first, second and reverse; the gear-shifting lever being equipped with a ratchet device which positively locks each gear shift in its correct relation and prevents passing through or improperly meshing gears. The principle of the Chadwick transmission lies in the large bevel gear in the rear, the intermediate drive being directly from the

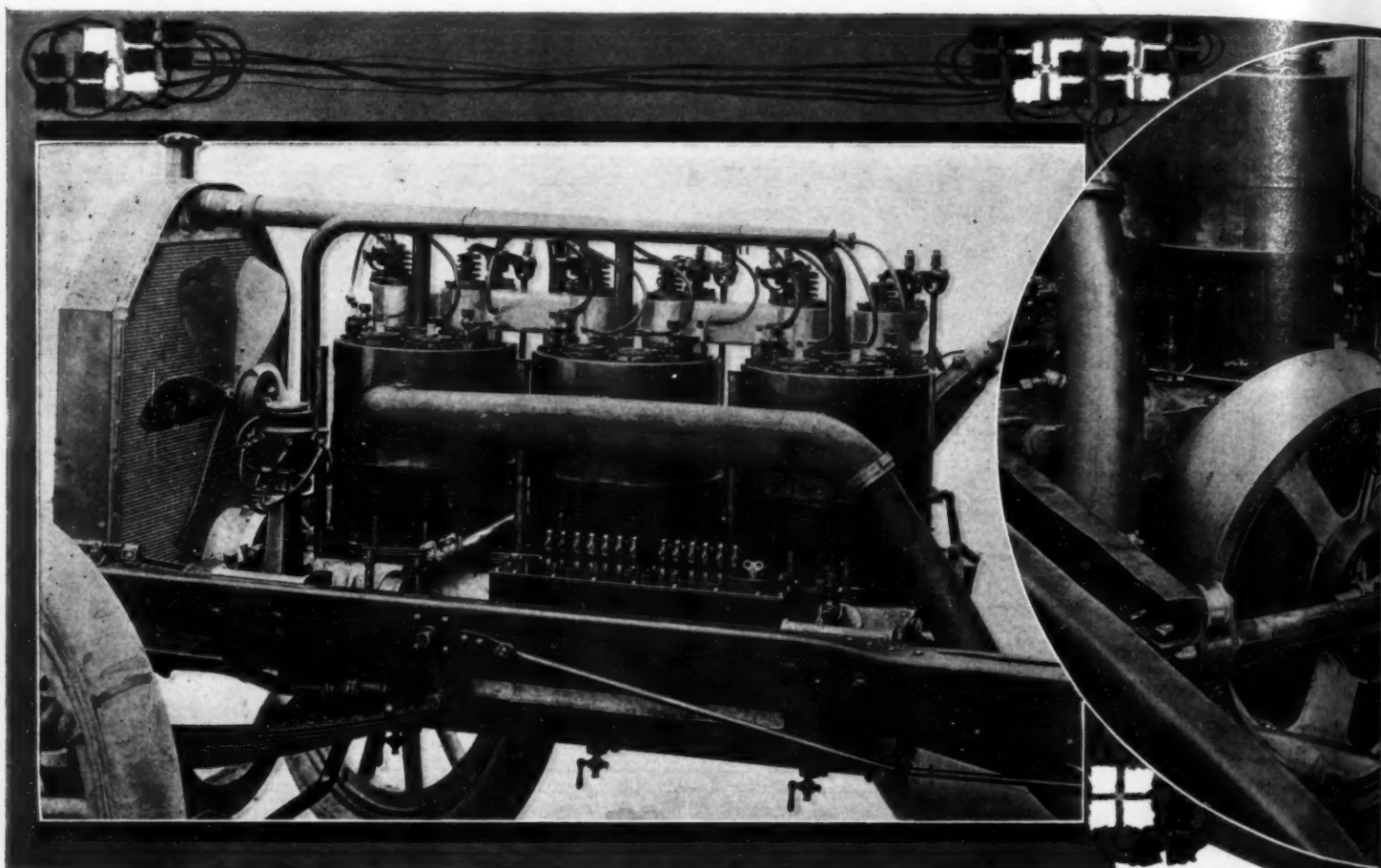


Fig. 1—Left-hand side of engine showing lubricator, timer and other details

drive shaft to the counter shaft and to one set of double bevel gears, drive being through the line shaft directly to the other set of bevels, with direct drive on fourth. The gear ratio is 2.25 to 1 on the Touring Car and Tourabouts. Gears are of a special alloy, heat treated, and where possible the gears are forged integral with their shafts. The bearings are all unusually large, imported, all gears being carefully cut and accurately ground to insure their quietness of operation. A filler plate for grease is installed in top of trans-

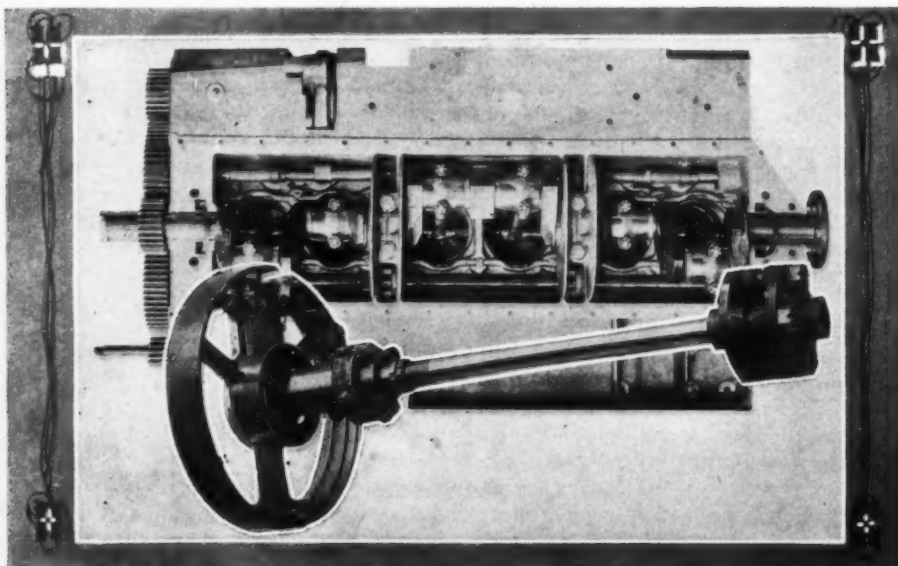


Fig. 2—Looking into the crankcase with its lower half removed

Fig. 3—Detailed view of clutch mechanism, showing

SPECIFICATIONS FOR CHADWICK

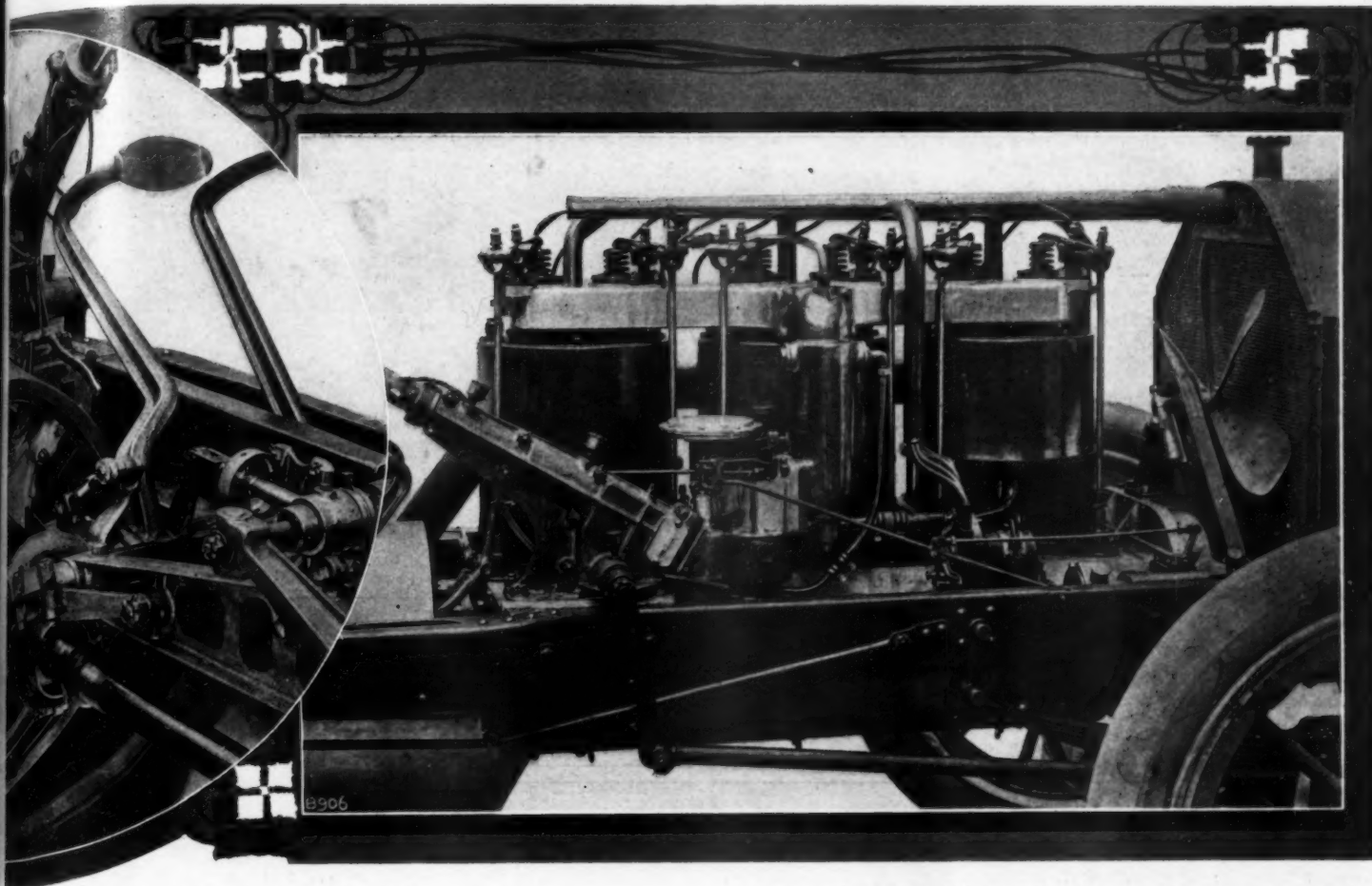
MODELS	Price	H.P.A.L.A.M.	BODY		MOTOR				COOLING		IGNITION		Lubrication
			Type	Seats	Cyl.	Bore	Stroke	Cyl. Cast	Radi-ator	Pump	Mag-neto	Battery	
Type 19.....	\$5500	60	Tour'g..	7	6	5	6	Pairs..	Tubular.	Cent'f'l..	Bosch...	Storage..	Pump..
Type 19.....	5500	60	T'b't*..	5	6	5	6	Pairs..	Tubular.	Cent'f'l..	Bosch...	Storage..	Pump..
Type 19.....	5500	60	R'bout..	3	6	5	6	Pairs..	Tubular.	Cent'f'l..	Bosch...	Storage..	Pump..
Type 19.....	6500	60	Limous.	7	6	5	6	Pairs..	Tubular.	Cent'f'l..	Bosch...	Storage..	Pump..

* "Miniature Tonneau" or "Standard."

mission and at all points where shafts enter or leave the transmission carefully designed grease retaining devices are installed.

The chain drive is of the Chadwick type with enclosing chain case, whose principle lies in the employment of a radius rod forming the major portion of the chain case. This radius rod is a large, carefully designed manganese bronze casting, ribbed to obtain enormous strength with minimum weight.

The chain cases are dustproof to insure that the chain shall operate under the most favorable conditions, it being properly lubricated at all times and no opportunity allowed for dust or dirt to get on it to cut it out. This type of drive tends to work with the springs to secure greater ease of riding. The differential gear is incorporated with the transmission, and in the rear is employed an I-beam section axle of chrome nickel steel drop-forged in one piece, which possesses a wide mar-



substantial frame and part of propeller shaft

Fig. 4—Right-hand side of engine with a view of magneto, carburetor and steering mechanism

CARS AS OFFERED FOR 1911

Clutch	TRANSMISSION				Wheelbase	Tread	Frame	BEARINGS			Weight	TIRES	
	Type	Speeds	Location	Drive				Crank-shaft	Trans-mis'n	Axle		Front	Rear
Int. Exp.	Selecti'e.	4	Frame.	2-Chain	133	56½	Cr. N. St.	Plain...	Ball....	Ball....	3600	36x4	37x5
Int. Exp.	Selecti'e.	4	Frame.	2-Chain	133	56½	Cr. N. St.	Plain...	Ball....	Ball....	3450	36x4½	36x4½
Int. Exp.	Selecti'e.	4	Frame.	2-Chain	112	56½	Cr. N. St.	Plain...	Ball....	Ball....	3000	36x4½	36x4½
Int. Exp.	Selecti'e.	4	Frame.	2-Chain	133	56½	Cr. N. St.	Plain...	Ball....	Ball....	3900	36x4	37x5

gin of safety and is not subject to distortion from road shocks. This type of construction transmits to the rear wheels the maximum amount of power, assures greater life and durability, with a wider margin of strength than has ever before been obtained, and also assists the designers in securing a car of minimum weight and maximum strength.

The braking systems are large and powerful, the main or service brake being actuated by a foot pedal and acting directly upon a large crucible-steel drum bolted directly to the compensating case. The brake shoes are equipped with cast-iron liners, the brake drum being 14 inches in diameter with 3-inch face, with cork inserts and producing instant locking action to the rear wheels if desired.

The placing of the brake upon the compensating case insures absolute compensated braking action, for at every turn the equalizing gears operate, with consequent assurance of their being in perfect condi-

tion. At high speeds it is of the utmost importance that brakes shall apply equally and there is no engineering design whatsoever that will give absolute assurance of this except the placing of a brake on the compensating case and braking through the equalizing gears. All adjustments are by hand, automatic locking devices being provided, these being some of the small refinements which must to-day be found on the high-powered, high-priced car. The rear or emergency brakes act directly upon the rear-wheel drums and are

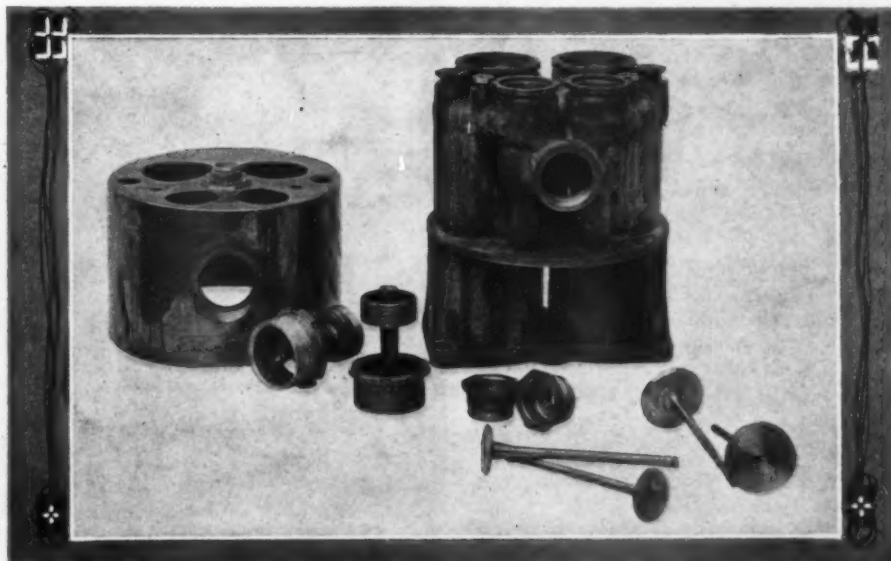


Fig. 5—Showing the cylinder castings with water jacket taken off and valves removed

operated by a hand lever. They are large in size, dustproof, manganese bronze to crucible steel, adjustments being made by hand.

In the Touring Car and Tourabout models the spring construction is semi-elliptic front and platform spring suspension rear. The front springs are equipped with a special safety link. This link is a patented Chadwick feature and absolutely provides against any danger of ditching due to loss of steering from front spring breakage. Owing to the engine being a dead load, the spring action in the front is further controlled by the equipment of Truffault-Hartford shock absorbers.

The platform spring extension in the rear has been carefully worked out, the springs are bushed, eyes being perfectly parallel and springs equipped with force-feed oilers, ample clearance being allowed for spring action. The Chadwick car has been noted for its unusual qualities of easy riding and this comes about largely from the carefully worked out and satisfactory spring suspension.

Runabout models are equipped with semi-elliptics front and rear. All springs are of vanadium steel with ample leaves, so that breakage is practically unknown.

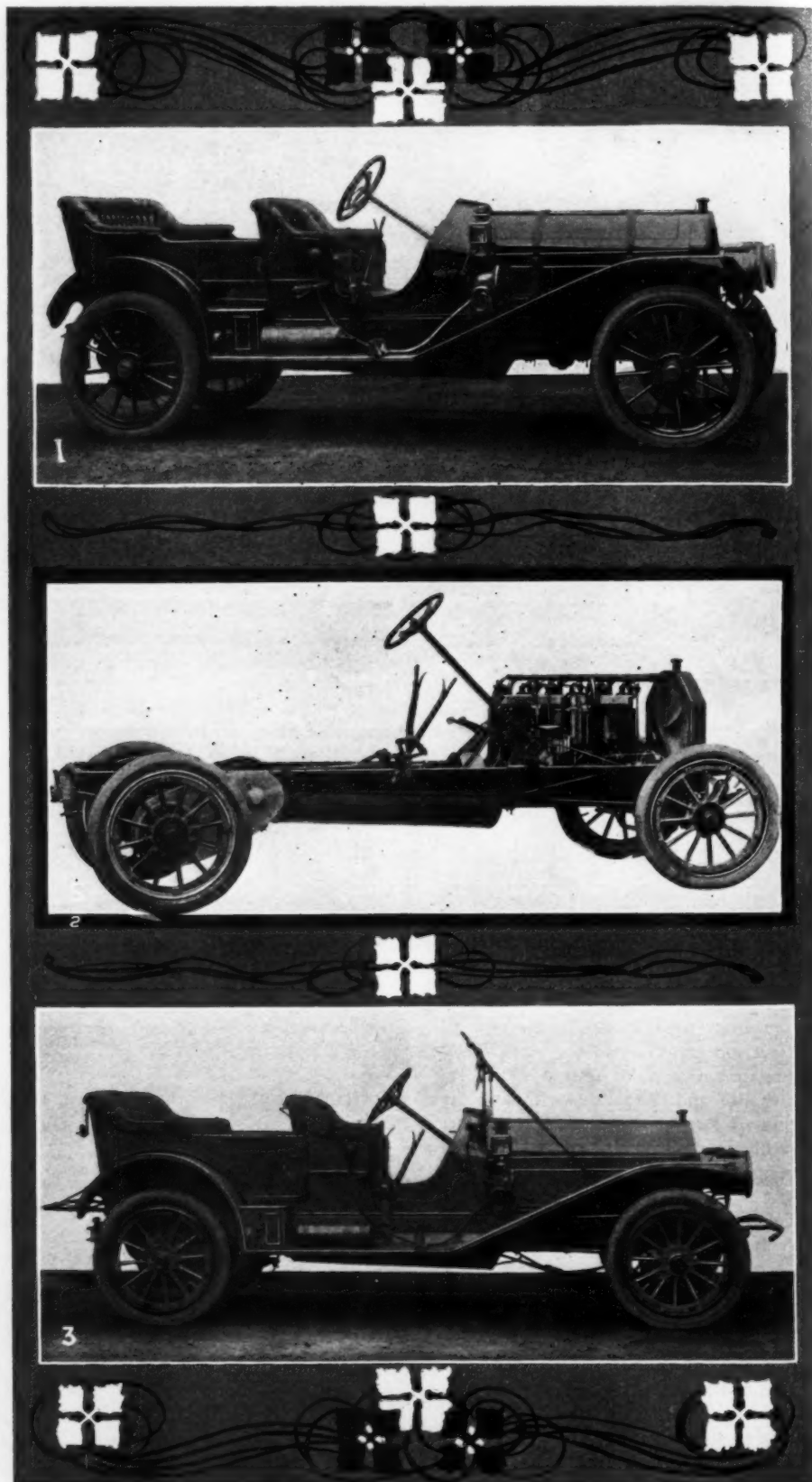
The worm-and-screw steering gear is of the reversible type, equipped with 19-inch steering wheel, and remarkably quick in operation, giving a full sweep of the front wheel in 15-16 turns of the steering wheel. The steering gearcase is phosphor bronze and arched with a long supporting arm, so used that no dependence is placed on dash support to hold the steering column. To prevent road shocks being communicated to the gear, the steering axle bolts around which the front wheels revolve as a center are so inclined that shocks will be absorbed into the axles, and through the springs instead of through the steering gear connections—a most important point. Provision is made for adjustments which can be made without dissembling the gear. The side link connecting the steering knuckle arm, also the cross link which is at the rear of the front axle, are fitted with ball and socket ends so arranged that if the cap should unscrew and come out it would be impossible for the ball to come out of the socket, owing to the method of assembling.

Both front and rear axles are of I-beam section, chrome nickel steel, drop-forged in one piece. These are the type of forgings which are hammered and the constant pressure of the metal tends to make them enormously tough. They are heat-treated to give the maximum strength. The steering axles and steering axle levers are also of special alloy steel, as are the materials throughout the car.

The wheels are built of the finest grade hickory stock, having specially designed rosettes on the spokes for carrying the drums. The wheel bearings are all imported and several sizes larger than the loading would require and there are pro-

vided between the inside and outside bearings spacers so designed that if a ball should break, instead of grinding out the race the bearing will immediately change to a plain bearing and run upon the spacer. This spacer also serves the function of preventing the wheels from coming off.

The frame is of chrome nickel steel, channel section, heat



Miniature Tonneau Tourabout, seating chauffeur and four passengers
Right-hand side of 133-inch wheelbase chassis
Standard Chadwick Six Tourabout, seating capacity five.

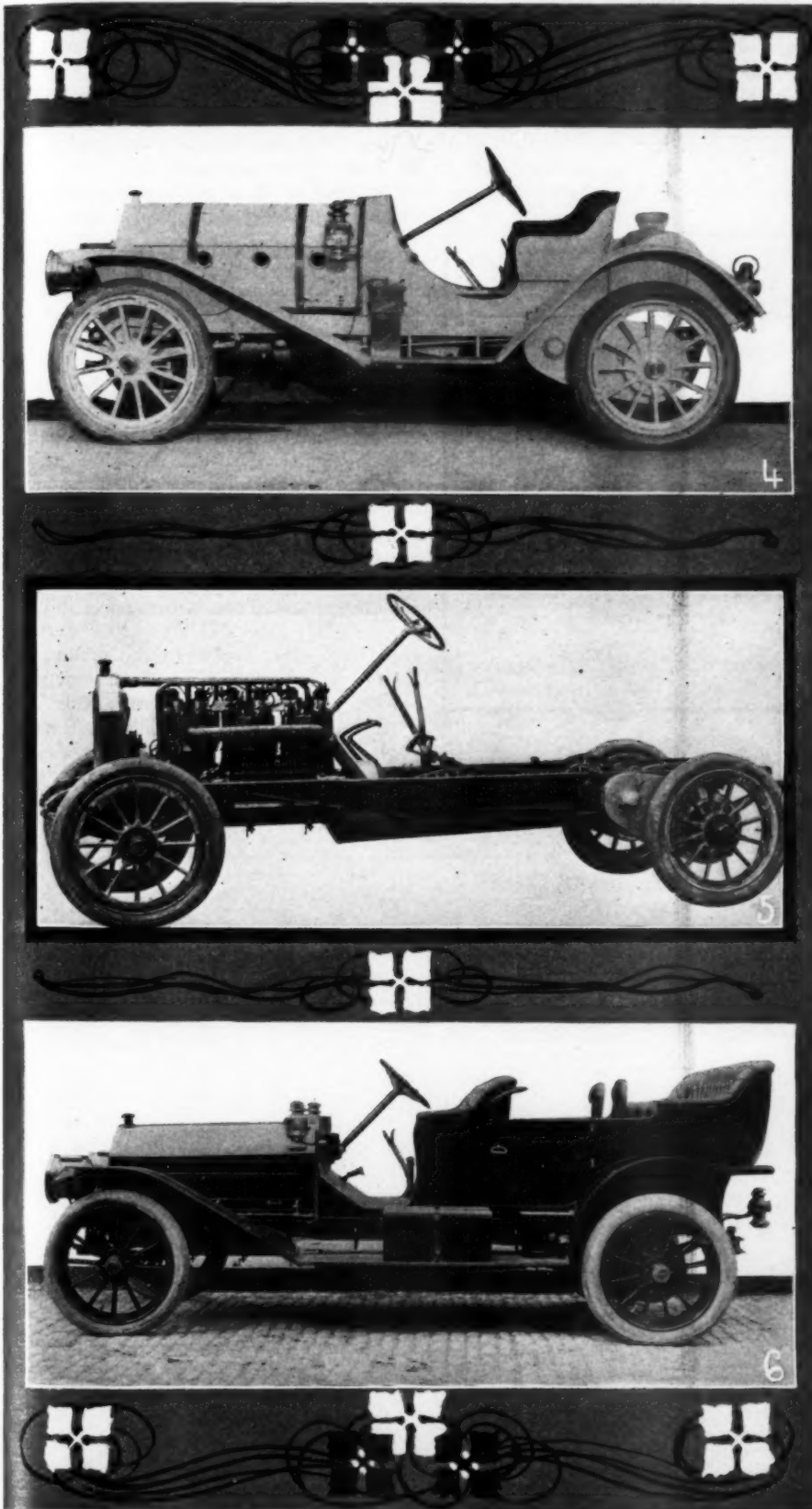
treated and bottle neck to allow short turning, and at the point where the frame is narrowed at the bottle neck there are supporting reinforcing gussets installed. All cross-members are of chrome nickel steel, heat treated.

Ignition is by means of Bosch high-tension magneto positively gear driven, the advance and retard being obtained by means of

a spiral advance. The circuit-breaker is fixed in a permanent position to give a maximum intensity of spark at all positions of advance or retard, a fat, hot spark being obtained which enables the car to be throttled down very low on direct drive. The auxiliary system consists of a Herz low-tension timer with high-tension distributor and a single coil box on the dash with storage battery and a separate set of plugs, so that the two systems are entirely independent of each other, the auxiliary system being used for purposes of starting only and, where necessary, in an emergency. The car can be started on one-quarter turn of the crank on the magneto alone. The usual number of spark and control levers are provided on the wheel, except that they are very substantial and in addition to this the magneto cut-out button for the purpose of grounding the magneto is placed upon the steering wheel instead of upon the dash and in descending steep hills the engine can be used as a brake if desired. The magneto is held by means of a strap and winged nut, being located by dowel pins, so that it can be quickly removed for purposes of inspection.

Lubrication is by means of a Precision oiler, 14 feeds, there being an oil lead to each of the pistons, to each of the main bearings, to each of the crankcase compartments and to the compensating case in the back, the lead to the compensating gearcase passing through a bleeder test valve on the dash, which shows whether or not there is oil in the tank. The oil leads to the pistons lubricate the cylinder walls and also pass through the hollow wrist pins, lubricating the upper ends of the connecting rods. The leads to the main bearings lubricate these bearings and the oil passes through them to the connecting rod bearings, the crankshaft being equipped with a banjo oil catcher which throws oil in to feed the connecting rods. The front and rear bearings are also ring oiled, there being sufficient oil underneath to insure the delivery of the lubricant to them in addition to the force feed of the lubricator. In addition to this there is a receptacle in the base which furnishes a separate and distinct system of splash lubrication. After a lubricating oil has passed through a bearing its physical character is changed, and to insure as near perfect lubrication as can be secured fresh oil must be supplied to each and every bearing, which cannot be obtained other than by a positive force-feed lubricator supplying fresh oil. The lubricating system of the Chadwick engine has been most carefully worked out. The oiler is so designed as to furnish instant adjustment so that any desired quantity of oil can be fed to any particular point.

Considered from the price standpoint, the Chadwick 1911 proposition stands thus: Touring Car, Miniature Tonneau Tourabout and Standard Runabout each \$5,500, f.o.b. Pottstown; Limousine, \$6,500, f.o.b. Pottstown.



Standard Chadwick Runabout with seating capacity for two passengers
Left-hand side view of 133-inch wheelbase chassis
Seven-passenger Touring model of Chadwick Six

1911 Gemmer Gear Offering

THREE TYPES OF STEERING GEARS SHOWN; MODELS "O" AND "K" ARE WORM-AND-SECTOR TYPES; MODEL "G" IS THE CHARACTERISTIC GEMMER GEAR

AUTOISTS of experience now regard steering gears as entitled to the most exacting consideration, and they demand that the design, construction and material used in this part of automobiles be of the best. The requirement, from the necessity point of view, contrary to the usual way of looking at it, depends upon the conditions as follows:

(a) Considering the square of the speed of the automobile;

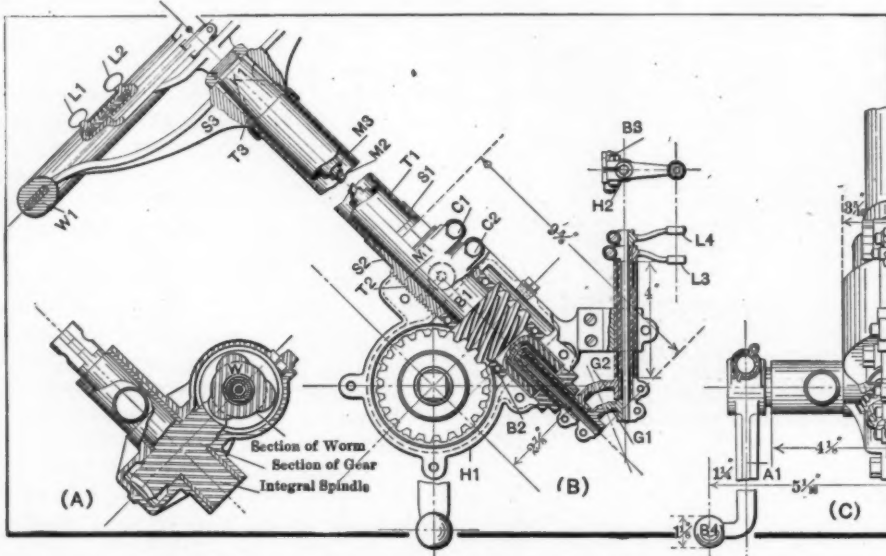


Fig. 1—Model K gear of the worm and gear type with ball thrust bearings above and below the worm and liberally proportioned plain bearings for the gear shaft

- (b) Involving the weight of the car;
- (c) Viewing the design of the front axle;
- (d) Locating the center of gravity of the structure;
- (e) Noting the fore-and-aft distribution of the weight;
- (f) Influenced by the diameter of the road wheels used.

Just using what might be termed a good steering gear, not figuring upon all the influencing considerations, as will be plainly seen, is not the right way to arrive at the right conclusion, and

as the Gemmer Manufacturing Co., of Detroit, Mich., has pointed out, the proper use of steering gear requires mature consideration. The company makes a specialty of this character of work, and in addition to a large and well equipped plant, it is provided with all the means for determining the best conditions to surround each of its makes of steering gear.

The illustrations here afforded of three of the Gemmer types of gear, while they do not cover the whole range, are sufficient to illustrate the points to be made, in which quality of material is the first requisite, but, as will be shown, there are other equally or more important details that must be attended to if the end is to be entirely satisfactory.

In Fig. 1 of the Model K gear reference will be made to a section of the worm and gear (A) with a view to making the point that the material used is of a fine grade of true cementing steel, and it is heat treated to render it glass hard, but the core is left in a state to resist shock. It is too frequently overlooked in this class of work that mere low-carbon steel is not sufficient for the purpose. True, it is possible to employ ordinary grades of low-carbon steel in cementing work, but when the product is finished it can not be claimed that safety is one of its properties, and when this important point is disregarded in steering gears it looks as if the greatest question is ignored. Considering (A) in Fig. 1, the worm is of the cementing steel referred to, and it is first machined to near size from bar-stock, then machined to accurate blanking size, after which the worm is hobbled, leaving "grinding finish" over the diameters of the two extremities of the integral spindle. The next step is to pack the worms in bone in a box, after which the cover is put on, and luted, to keep it tight against the introduction of any contaminating substance; also to keep the gases from the bone in long enough to cause carbon to penetrate below the surface of the metal for a suitable distance to afford the hard skin; but the fact that the metal is of true cementing stock assures that the penetration will be limited to that definite amount that is known to suffice for the purpose, leaving the core soft and dynamic.

Passing on to the remaining things to be noted, B1 is a thrust ball bearing above the worm, and B2 is a similar bearing below the worm, as shown in the section (B). The housing H1 is a close fit, made in the shape that affords the requisite strength, and is so designed that it goes readily into place in substantially every make of car; in other words, it is approximately universal. The steering post tube T1 is accurately fitted to the housing by means of a sleeve S1, butting up against the shoulder S2 of the member M1, and the housing H1 is split at this point so that, by means of the clamping bolts C1 and C2, a secure relation is realized, but this relation is aug-

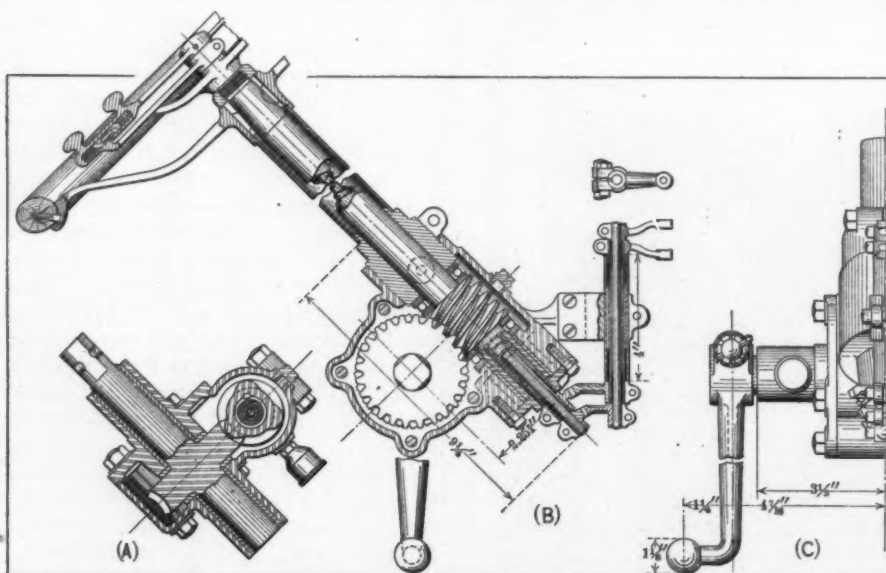


Fig. 2—Model O gear of the worm and sector type, differing from Model K system in detail

mented due to the use of threads T2 which are chased in the housing H1 and mated on the member M1. The spider S3 of the steering wheel W1 is fitted over a taper T3 and Woodruff keys K1 are employed to prevent the spider from rotating excepting with the tube. The spark and throttle levers L1 and L2 shown in part section are above the steering wheel and they impart motion to the torsion members M2 and M3, thence to the bevel sets G1 and G2, from where motion is directed to the mechanisms on the carburetor and magneto. Either the system G1 or G2 may be used for the magneto, the remaining system being for the carburetor control. An examination of the plan will show the nice designing of the small levers, which are made with split hubs H2 rendered secure by means of clamping bolts B3. Referring to Fig. C and to the steering gear arm A1 with its large diameter ball B4, the extension of the arm is square, and the hole in the arm is broached square.

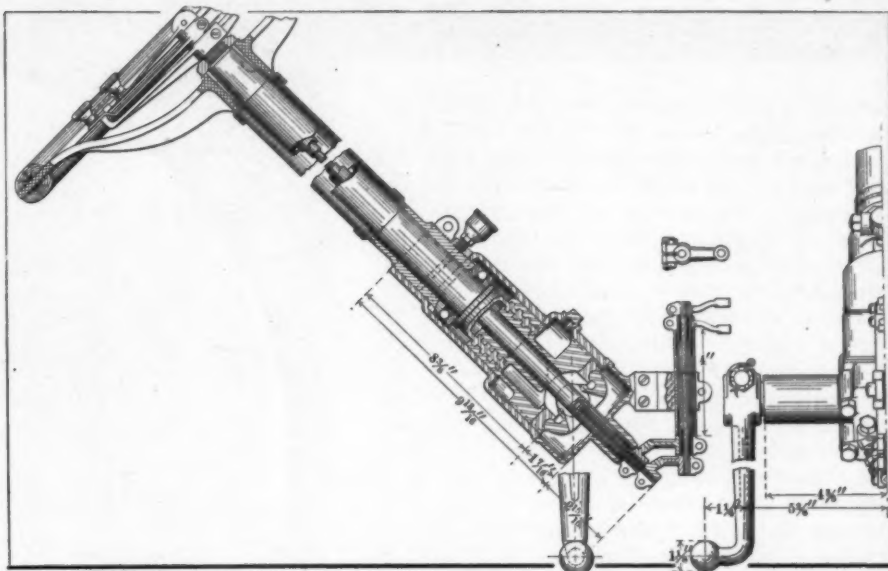


Fig. 3—Characteristic Gemmer gear as used under the most exacting conditions of service

For a certain class of work, notably on cars of lower power and speed than when the gear as above described is used, the

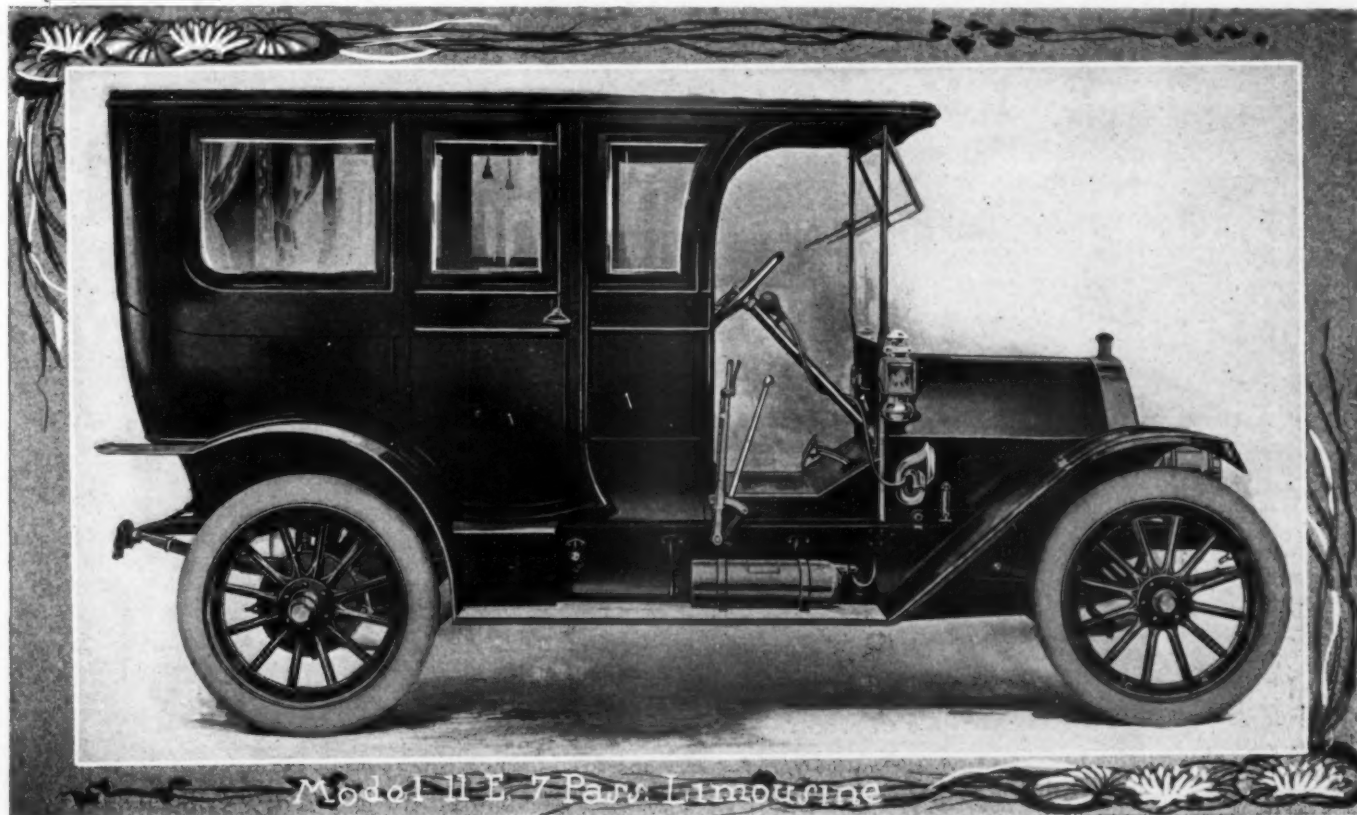
gear as shown in Fig. 2, known as type O, is used. Fig. 3 is an illustration of the characteristic Gemmer gear.

1911 Speedwell Automobiles

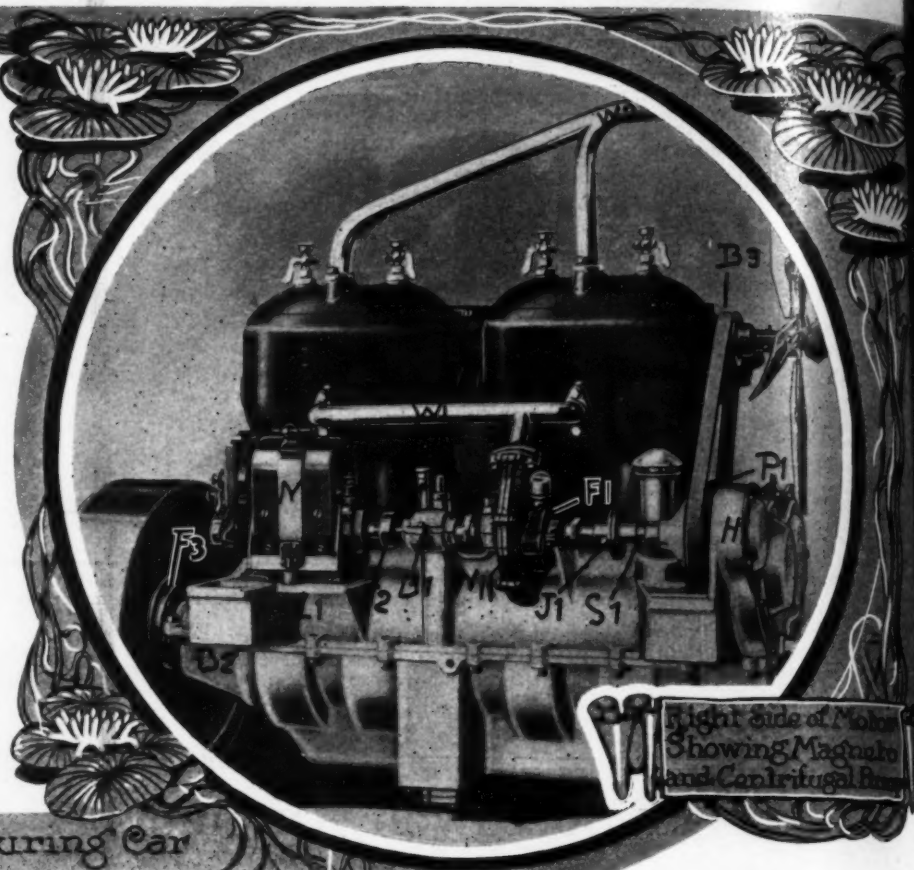
**ELEVEN OPTIONS TO THE PURCHASER;
POWER PLANT COMMON TO ALL; REFINEMENTS
RATHER THAN CHANGES PREVAIL**

TAKING a single power plant and fixed conditions of the chassis with a wheelbase of 121 inches and standard tread the Speedwell Motor Car Co., of Dayton, Ohio, provides eleven types of cars for the various classes of its clientèle, the lowest of which sells at \$2,500 in the form of a fore-door roadster, and the

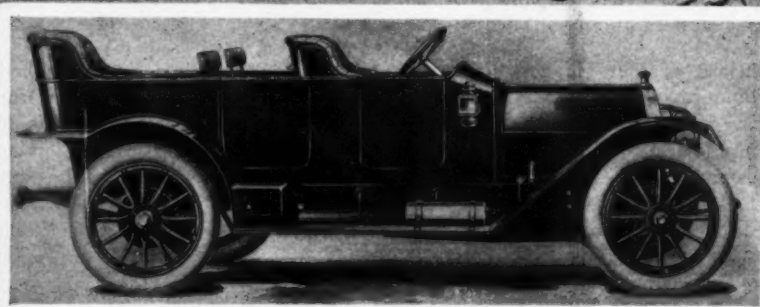
highest priced car sells at \$3,850 with a limousine body. The tabulation as here afforded gives the necessary information in relation to the several options. The tire equipment is 36 x 4 on all four wheels of the respective models, and referring to the view of the stripped chassis, the general arrangement of the



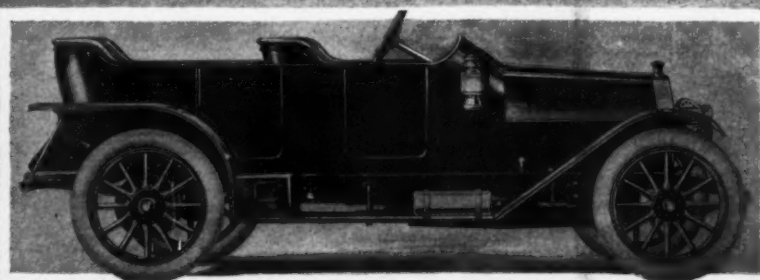
units is clearly indicated, with the radiator R1 on the center line of the front axle, and the motor M1 far enough back to make room for the fan F1. The clutch C1 is housed in the fly-wheel; it is of the cone type, and a universal joint U1 is placed between the clutch and the three-speed and reverse selective sliding gear system G1. A second universal joint U2 connects the clutch G1 with the propeller shaft S1, and a third universal joint U3 makes connections with the live rear axle A1. The service and emergency brakes B1 and B2 are in drums on the rear wheels. The chassis rides on semi-elliptic springs S2 and S3 at the rear and somewhat shorter semi-elliptic springs S4 and S5 at the front. The scheme of design throughout is straight line, and provision is made for the equalization of the braking pressure by means of equalizers E1 and E2. In the steering mechanism it will be observed that the drag rod D1 is straight, and the tie rod T2 is not only straight, but it is in a protected position to the rear of the front axle, the latter being a drop forging of the I-section in one piece. The chassis frame is of the channel section, with crossbars at points of greatest necessity, and the power plant is sup-



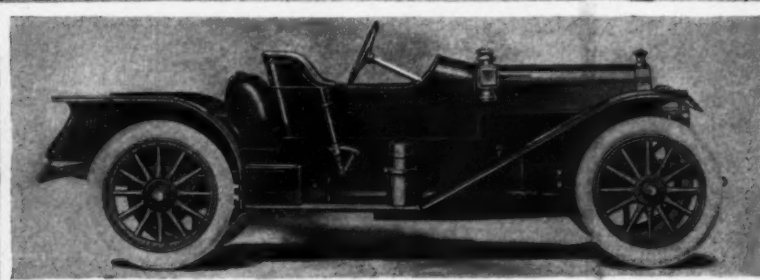
Model 11-F, 7-Pass. Special Touring Car



Model 11-G, 4 Pass. Torpedo

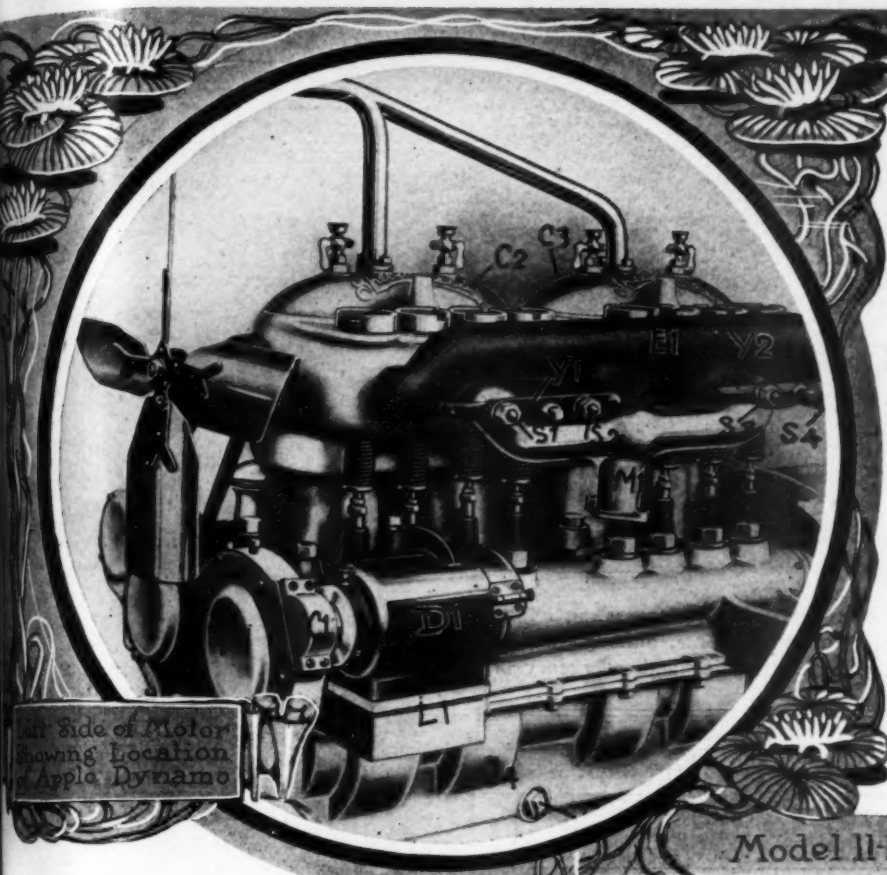


Model 11-H, Semi-racing Roadster



ported on a subframe which terminates at a crossbar to the rear of the transmission gear.

The live rear axle of the Timken type, with a shell-like one-piece housing H1 with the differential unit D1 removed, shows the jackshafts J1 and J2 with square ends to engage the differential set through the broached holes B1. Gear ratios are 2 10-19 to 1, 3 to 1 and 3 3-7 to 1. The spring perches P1 and P2 are free to rotate, thus relieving the axle of spring contortions, and the brake drums B2 and B3 are of large diameter with wide-faced brake bands, B1, B2 and B3 of the constricting type actuated by the level L1. The internal expanding brake shoes are actuated by the lever L2. The shell-like axle housing H1 is of great strength, but in order to guard against any possibility of sagging the bobstay S1 is also provided. Timken roller bearings B4 are placed on the spindles, and the drive is made from the jackshafts J1 and J2 through dog clutches C1 to the road wheels. This type of axle affords immunity from the class of trouble that comes from axle sagging and disalignment. The Timken roller bearings provide against thrust as well as caring for the radial load, and they may be adjusted at will to compensate for wear. In the differential unit the bevel drive is incorporated, and the entire outfit is mounted complete in its housing, after which it is inserted into place in the enlargement of



and a flexible joint J1 is placed in front of the pump with a second joint J2 back of the bearing B1, but in front of the magneto M1. A flywheel F2 is flanged to the crankshaft at F3, and the rear end bearing B2 has a large projected area in order to support the weight and gyrations of the flywheel in addition to the torque of the motor. The water piping W1 is symmetrical and well made, and the water leading from the motor to the radiator is through a well-contrived water manifold W2 with a flexible hose coupling intervening. The fan F4 is substantially made, has a good propelling ability and is actuated by a flat belt B3, driven by a flanged pulley P1. The workmanship throughout is on a high plane and the general appearance of the motor accords with accepted practice along conservative lines.

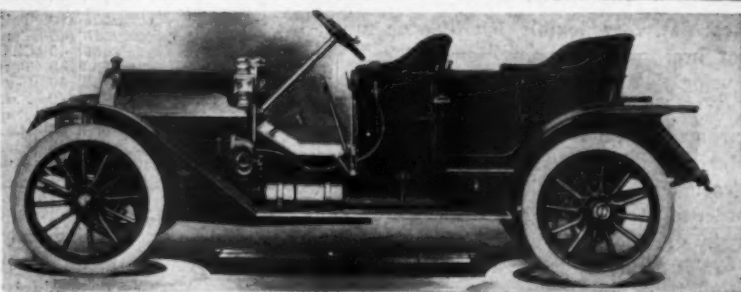
Ample cooling effect is given by an efficient cellular radiator, the water being circulated by a large centrifugal pump. Air is drawn through the radiator by a carefully-balanced fan, driven by an endless belt, any stretch in which may be taken up by an eccentric adjustment.

An 18-inch steering wheel with an aluminum web and Circassian walnut rim is used on all models. A worm and complete gear of vanadium

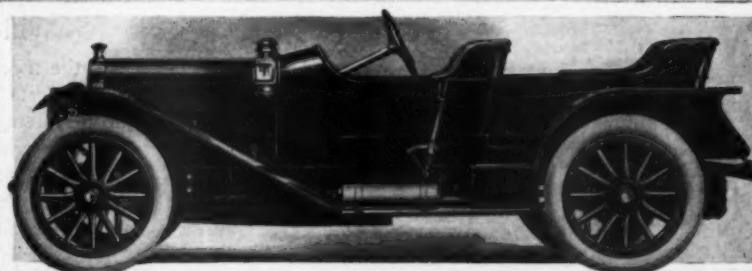
the shell, and noiseless performance is assured as well as ease of disassembling.

The 40-horsepower, four-cylinder, water-cooled motor has the cylinders cast in pairs with a 5-inch bore and stroke respectively; valves are on the left-hand side and are operated by a single camshaft. Referring to the illustration showing the left side of the motor, provision is made for an Apple lighting dynamo D1, resting on a ledge L1, driven by a pinion within the half-time housing H1, taking power from the half-time train, and the pinion is accessible through the cover C1. The carbureter is also placed on this side and is flanged to the manifold M1. The exhaust manifold E1 and the intake manifold M1 are held against flanged surfaces of the cylinders C2 and C3 by means of yokes Y1 and Y2, utilizing four studs S1, S2, S3 and S4, which are in a get-at-able position so that the time required to remove and replace the carbureter and the manifolds is reduced to a minimum. The lower half of the crankcase C4 is provided with an oil sump, and a plug P1 is so placed as to drain the sump and afford a means by which it may be flushed out. Referring to the view of the right-hand side of the motor, the magneto M1 is placed on a ledge L1 near the flywheel, and the water pump W1 is flanged to a face F1, it being the case that the magneto and the pump are driven by a shaft S1 taking power from the half-time gear case H1,

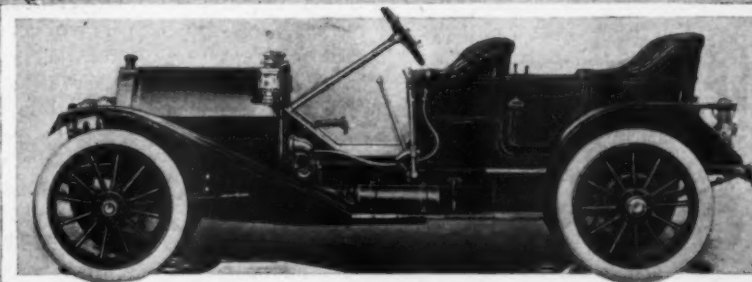
Model 11-K, Close Coupled 5 Pass. Car

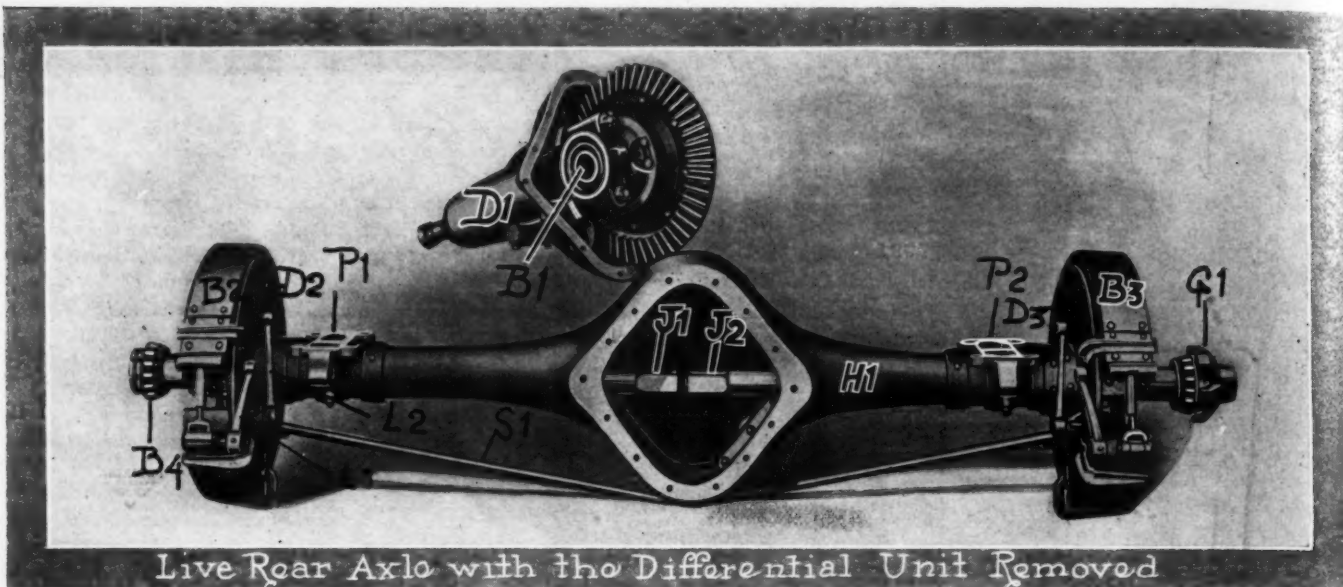


Model 11-H, With Toy Tonneau



Model 11-C, 4 Pass. Toy Tonneau





Live Rear Axle with the Differential Unit Removed

steel, carefully hardened and ground, are enclosed in a heavy housing with simple means of taking up wear in the bearings and between the worm and gear. A large force-feed grease-cup lubricates all frictional surfaces. The worm and complete gear type allows four changes of teeth, which is in strong contrast to all other types, which allow no change.

The semi-elliptic springs are made from the finest spring steel of special analysis, and are rigidly tested and inspected before being placed under the car. The springs are $2\frac{1}{4}$ inches wide and almost flat, very flexible, but of such toughness that breakage is almost impossible. The springs being flatter than in former models, the frame is $1\frac{1}{2}$ inches closer to the ground. The front springs are 40 inches, the rear 56 inches long. Perfect alignment is maintained by small lips on each leaf. All spring eyes are provided with hardened steel bushings.

Unusually great braking power is provided—approximately one inch of braking surface to each seven pounds of car. The four brakes, of simple and heavy construction, act on rear wheel

brake drums, an improved provision being made for all adjustments, although adjustments are seldom necessary. Both running and emergency brakes are provided with equalizers.

SPECIFICATIONS FOR SPEEDWELL

MODELS	Price	H.P.A.L.A.M.	BODY		MOTOR				COOLING		IGNITION		Lubrication
			Type	Seats	Cyl.	Bore	Stroke	Cyl. Cast	Radiator	Pump	Magneto	Battery	
11-H.....	\$2500	40	R'st.*	2	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-C.....	2625	40	T. Ton.	4	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-D.....	2650	40	Tour'g.	5	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-K.....	2650	40	Cl. Coup	5	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-G.....	2700	40	Torp....	4	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-H Special..	2700	40	S-Ract†	4	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-D.....	2750	40	F.d.Tg..	5	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-F.....	2800	40	Tour'g.	7	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-F Special..	2900	40	F.d.Tg..	7	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
11-E.....	3850	40	Limous.	7	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..
Cruiser.....	3500	40	Cruiser.	4	4	5	5	Pairs..	H'comb..	Cent'fl..	Bosch...	Battery.	Pump..

*Fore-door body. †Fore-door

Diamond tires are standard equipment, 36 x 4 front and rear on all models but the seven-passenger touring cars and limousine, which have 36 x $4\frac{1}{2}$ front and rear. Firestone demount-

The Co-operator Favors Himself a Little

Methodic co-operation for industrial progress is fashionable among theorists only. The American citizen, native or naturalized, who fights for his country in times of peace fights a little more for himself than for the rest of us combined. But whatever he accomplishes, by making automobiles, for example, better suited for the needs of the masses or the classes, he has to share with all. He has to give value. Only his defeats are his own and remain so. They probably number ten, to one success, among the soldiers of peaceful progress. Yet only he who does not shoot is without honor—if he has gun and ammunition. Methodic co-operation would save some of the misses, but, oh human nature unregenerated, the crown of reward for a bull's eye would descend upon the foxiest head in the combine, whose genius and whose genius no one wishes to have propagated or promoted to the seat of prestige. Gunning is as common as grass and prevails in co-operation, as in politics. It is gunning that is wanted, and a breed of gunners, fellows who can set their sights with little direction from the lieutenant and who can "go it" alone, having confidence in their own ability for discerning a target among the values of civilization. The journal of special purpose stands for all the co-operation the lone gunner wants, and he does not want it unless it shoots, too.

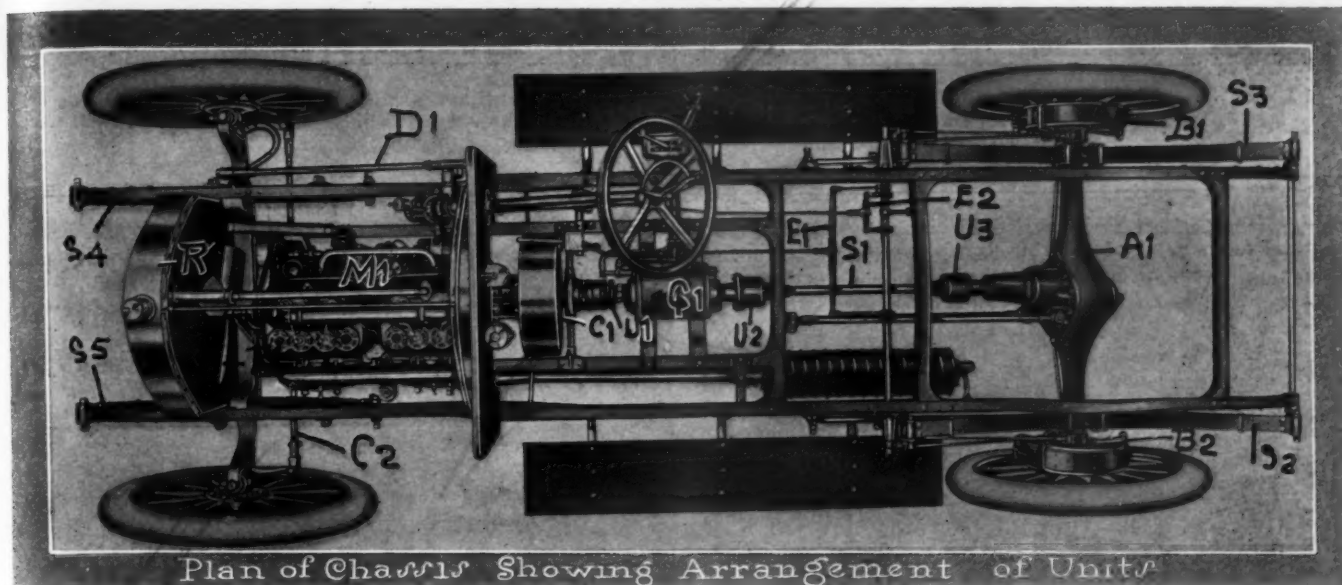
Will Coke Replace Benzine for Fuel?

In the mechanical transportation of men and material on ordinary streets and roads the victory will be to that system, or those systems, where the cost of service and the duration of full efficiency without undue outlay for repairs are the lowest, and the degree of reliability the greatest.

The advocates of steam figure that a five-ton vehicle, running on streets and roads with over 10 per cent. grades, should be able to tow a 2-1-2 ton tender without trouble. A benzine motor to effect this would be of about 40 horsepower, and take 0.4 kilogram equals 4.88 pounds average of benzine per horsepower and per hour, which, at marks 30 per 100 kilograms equals \$3.24 per 100 pounds average, would cost marks 4.88 or \$1.14 per hour.

The steam-driven vehicle would, it is claimed, do the same thing all day with 400 liters equal 14.12 cubic feet of gas coke at mark 0.80 per 100 liters equals \$5.39 per 100 cubic feet, costing only marks 3.20 = \$0.76; that is, mark 0.32 = \$0.76 per hour.

The cylinders for the steam engine must withstand only 14 atmospheres pressure and a temperature of 190 deg. Cent. equal 384 deg. Fahr.; whereas those of the benzine motor need withstand a temperature of 800 deg. to 1,200 deg. Cent. equals 1,372 deg. to 2,192 deg. Fahr.



Plan of Chassis Showing Arrangement of Units

able rims are on all models but the 11-H, which has Goodrich quick detachable.

In the matter of price the Speedwell line offers an exception-

11-G "Torpedo," \$2,700; 11-H Special, semi-racer, \$2,700; 11-D special, \$2,750; 11-F touring, \$2,800; 11-F special, \$2,900; 11-E Limousine, \$3,850, and the "Cruiser," \$3,500. The latter, a special 1911 effort, with a wheel-base of 132 inches, is a particularly rangy-looking car, and in addition to the regular equipment there are included a pigskin trunk and cover, cape top and shock absorbers.

Standard equipment includes a Prest-O-Lite tank with all models (except 11-H, which has a generator), two acetylene gas headlights, two side lamps, one tail lamp, horn, jack, tool kit, tire repair kit, pump, battery box, tool box, robe rail and Bosch magneto. Model 11-H Special has rear seats, same pitch as front, and pressure gasoline tank in rear.

Although it has never been the custom of the Speedwell concern to enter cars in road and track competitions, many individual owners have done so, and with marked success in some instances. In the Good Roads tour from Atlanta to New York a privately owned Speedwell was among the absolutely clean-score cars.

CARS AS OFFERED FOR 1911

Clutch	TRANSMISSION				Wheelbase	Tread	Frame	BEARINGS			Weight	TIRES	
	Type	Speeds	Loca- tion	Drive				Crank- shaft	Trans- mis'n	Axle		Front	Rear
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	63x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	121	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	
Cone...	Selecti'e.	3	Amid'p.	Shaft...	132	56	P. Steel.	Plain...	Roller...	Roller...	36x4	36x4	

type with toy tonneau rear.

ally wide range of choice. Commencing with Model 11-H, fore-door body roadster, at \$2,500, there follow the 11-C toy tonneau, \$2,625; 11-D touring car, \$2,650; 11-K close-coupled, \$2,650;

Losses in Economy with Alcohol Motors

The losses in economy with alcohol motors come under five heads: Those due to the work of drawing in and exhausting the gases of the charge; (2) those of friction of moving parts; (3) those caused by late and slow combustion, as shown by bad indicator diagrams; (4) loss of heat given out to the cooling water, and (5) passage of unconsumed alcohol through the machine. This latter, which is about the only loss in which the motors of various makes differ greatly, accounts for the enormous consumption of fuel of some motors under certain loads and conditions.

It must be noted in this connection that to insure complete combustion no more alcohol must be introduced into the ignition chamber than the air can properly supply with oxygen for combustion; and that the intermixture shall be so complete that even with exactly theoretically perfect proportions of alcohol and air, no uncombined air or alcohol shall be exhausted. A good instance of the truth of this is given by Meyer as the result of tests of two motors of equal size, and of the same builder, but in which the compression was in one case 5.91 times, and in the other 8.90. The first-named motor consumed 436 grams of 86.1 per cent. alcohol per horsepower per hour; the other, 364 per horsepower per hour under same conditions.

First Russian Touring Competition

The first Russian touring competition, from St. Petersburg to Witebsk, Gomel, Kiev, Moscow, Wischni Wolotschok and St. Petersburg, a distance of 1,900 miles, has been recently won by Willie Poege on a Mercedes, with Fritsch, also on a Mercedes, second; Valenski third on a Gaggenau, and Heine and Erle respectively fifth and sixth on Benz cars.

The five Mercedes cars taking part in the competition are similar to those which took part in the Prince Henry tour in Germany, their four-cylinder motors having a bore and stroke of 3.7-10 inches by 6 inches, with four valves in each cylinder. As the Gaggenau firm is practically a newcomer the winning of third place by it came as a surprise. Having come so successfully through the Prince Henry tour it was expected that the Benz would do better than fifth and sixth positions. A streak of ill-luck in the form of slight accidents, however, kept them back. At the start there were 43 cars; Germany supplied 26, France 8, England 3, Russia 3, Belgium 2 and Italy 1. Considering the state of the roads the rather high number of 35 cars which finished the tour is very satisfactory. Owing to the lack of hotel accommodations in the towns and villages passed through, a special train with dining and sleeping cars followed the competitors, carrying all their baggage.

Digest

EXTRACTS FROM CONTINENTAL JOURNALS ON SUBJECTS ALLIED TO AUTOMOBILE ENGINEERING: TWO CARBURETERS OF SPECIAL PURPOSE—AMERICAN KEROSENE NOT SUITABLE FOR MOTOR FUEL

Special adjustment of a carbureter for very low driving or for keeping the motor going while the automobile is at a standstill is provided by the German Daimler Company by means of the construction shown in the accompanying illustration, Fig. 1 A and B, with especial view to avoiding that fouling of spark plugs and combustion chamber which is likely to be the result of poor combustion when the motor, as ordinarily throttled, draws in a too-rich mixture. The jet *f*, fed from the float chamber *d*, terminates in the tube *b*, which is surrounded by the air chamber *a* and connected with the induction tube of the motor by the conduit *c*. In the cylindrical extension *g* is placed the sliding tube *h* which at its inner end carries a thin and bent tube *i*, open at both ends. In Fig. 1A, *h* is shown in the position for normal driving. The air channels are all open. In Fig. 1B, *h* is shown in the position which closes the connection between *b* and *c* and establishes instead the tiny tube *i*, one end of which is very close to the jet, as the only channel for the gas mixture.—*La France Automobile*, No. 35.

An improved constant-mixture carbureter, Fig. 2, has been designed by the French engineer Rebourg and has been tested with benzol as well as gasoline, in both cases resulting in greater flexibility of the motor. The jet *B* is surrounded with an air conduit shaped as a double cone and composed of a number of flexible brass strips which are twisted helically and overlap. These strips are secured at the bottom to a fixed ring *N* and at the top to the ring *D*, which is capable of a rotary as well as an up-and-down movement and provided with gear teeth. Centrally in the ring *D* there is secured a tube *E* whose lower portion telescopes around jet *B* when the ring *D* moves up or down and thereby covers or uncovers some of the apertures in *B* through which the fuel is discharged. When ring *D* is turned in the direction of the twisting of the brass strips, the central diameter of the air conduit *A*, is contracted, and at the same time its height is reduced and the ring *D* is lowered and a number of the apertures in *B* are closed by tube *E*. Turning of ring *D* in the opposite direction naturally has the opposite effect. The changes are worked automatically by the motor. To this end the diaphragm *G* operates ring *D* by means of the rack *C* meshing with the spur teeth of the latter. On the outer side of the diaphragm the atmosphere exerts its pressure through openings in *H*, and on the inner side the suction of the motor and the constant pressure of spring *R* take effect, the spring pressure being kept constant by

means of the compensating device *LT*.—*La France Automobile*, No. 36.

Many persons believe that our constructors should develop a motor for automobiles adapted for burning the same kind of kerosene that we burn in our lamps. But in France we generally use the burner called Cosmos for our kerosene lamps and it gives a very good illumination, a flame which is quite white and of suitable height and which does not smoke, but it has these qualities only if the wick is fed with kerosene of American origin. This kerosene, so nearly perfect for our lamps, is very easily decomposed under the influence of heat and then deposits carbon and releases lighter hydrocarbons. For this reason its use in motors produces fouling by deposits of lampblack. The kerosenes of Russian, Roumanian or Austrian origin, on the other hand, are not easily decomposed by heat, and if their richness in carbon does not admit of using them unmixed for lighting purposes, they make up for this deficiency by being very suitable for motors, in which they cause little or no carbon deposit. The kerosene to be used for motors should not be the same as that used for lighting. It should not be very homogeneous, either. The grade which produces best results contains a certain percentage of volatile products serving to facilitate the ignition of the explosive mixture.—Georges Girou in *Technique Moderne*, June.

In a recent article in *La Technique Automobile et Arienne* Mons. Claudel, the designer of the automatic carbureter of the same name, says that, theoretically, the best mixture develops a heat of 2,788 deg. Cent., 1,957 deg. with one and a half times more air, 1,488 deg. with twice and 1,010 deg. with thrice more air.—*Motor Trader*.

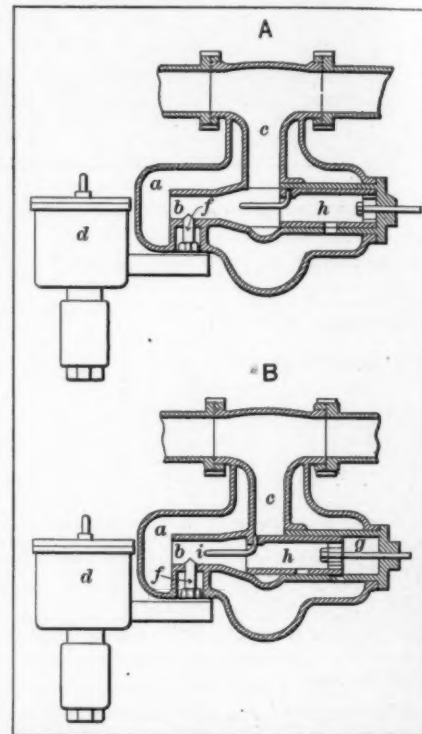


Fig. 1A and B—Carbureter device for minimum motor speed

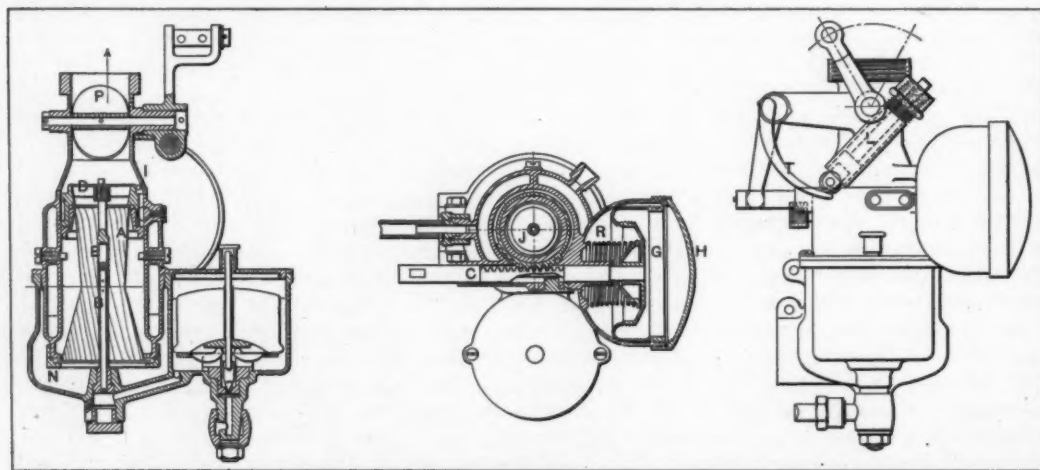


Fig. 2—Rebourg constant-mixture carbureter

Engineering Section

DEVOTED TO THE DISCUSSION OF ENGINEERING PHASES OF
AUTOMOBILING, INCLUDING DESIGNING AND CONSTRUCTION
FEATURES OF PRODUCTS, AND INFORMATION TO AUTOISTS



THE LABORATORY IS A BUSY PLACE IN THE PLANT—EXAMPLE OF PACKARD PRACTICE

THE great problem from the point of view of the makers of automobiles, and from an economic point of view as well, thus interesting users of cars, comes in the consideration of what to do with more or less worn-out machines. The second-hand car gets in the way of the maker, to whatever extent it prevents the sale of a new automobile, and it stands in the light of the aspiring automobilist if it prevents him from buying a new car and fails to come up to his requirement, if he elects to invest in a second-hand automobile instead. The maker should have no good ground for complaint, provided the second-hand car is capable of doing useful work, but some method will have to be contrived in the long run by means of which it will be possible to determine when a second-hand car ceases to be of real value.

Every purchaser of a second-hand automobile, whether or not he has had the benefit of prolonged experience, realizes that the major portion of all offerings is far from what he wants. He goes forth contemplating the sweet-running qualities of a new automobile, and he hopes to enjoy these sweet-running qualities in a second-hand car. Admitting that perhaps 90 per cent. of all the second-hand cars to be had are strangers to sweet-running qualities, it remains for the intending purchaser to find what he wants in a grab-bag, as it were. This would be a serious matter for a veteran automobilist to undertake, but when a man who has never had anything to do with a problem such as this figures on coming out whole, he shows evidence of much bravery, with a chance of being called "foolhardy."

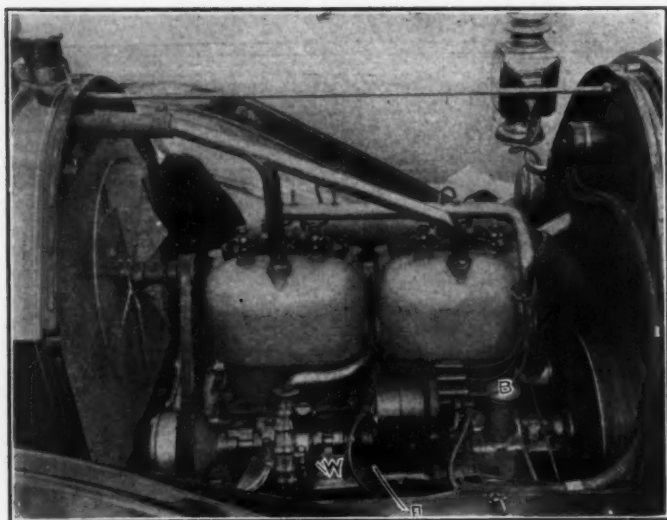


Fig. 1—Left-hand side of the motor, showing pump, magneto, oil level and oil filler cap

AFTER the first principles of the automobile have been mastered—and it is essential that this should be done before the owner thinks of taking the car in hand—he should familiarize himself with the different operations of the car. It is difficult at first to make the hands and feet work simultaneously. Before an attempt is made to start the car the different ingredients, viz., water, oil and gasoline, must be verified. The level of the oil is shown in a glass gauge placed beneath the magneto and marked A in Fig. 1.

The gasoline tank is situated under the front seats and the filler will be found under the passenger seat. To turn on the gasoline lift the floor board and turn on the tap above the gasoline feed pipe. There is also a tap to empty all the gas in the tank, and this should be drained off every 2,000 miles to rid the tank of any impurities that may find their way in.

The tension of the fan belt should always be such that there is no slack. To take up slackness, undo nut C in Fig. 5, lift fan bracket and tighten nut C again.

After these details have been attended to, which does not take more time than it does to read these few words, the needle valve of the carbureter should be raised to flood the carbureter



Fig. 2—Showing clutch mechanism, filler plug, switch and locking key, control pedals, gear box suspension and brake adjustment

When the Owner Drives

marked D in Fig. 5 and the switch turned to the right; this is placed on the dashboard and has a key, G, fitted so that when the car is left in the garage or in the street no one can start it.

See that the gear lever is in the neutral position shown in Fig. 6. This can be verified by moving it to and fro sideways. The levers on the steering wheel should then be set for starting. The top lever marked H in Fig. 6 is the ignition lever. This should be set about halfway between the bottom and its position as shown in the illustration. The throttle lever, the lower one marked H₁, should be set about two inches from the bottom.

After the engine has once been started, turn switch over to



Fig. 3—Correct position for sitting while driving and method of holding this particular change speed lever

M, which means magneto; it should be possible to restart it again during the day by turning the switch to the right and pressing button E in the center of the switch marked G.

Now take your seat at the wheel, depress the clutch I (Fig. 2) to the full extent of its travel, which is not much, and wait for the primary gear shaft to slow down to engage the first speed, which is done by pressing the lever T sideways toward you and drawing same backwards to position marked L on quadrant—in Fig. 6. The ignition lever H should now be placed as in the position in Fig. 6. By depressing the accelerator pedal K slightly to speed the motor and letting the clutch pedal I up gently the car will move forward. Wait for the clutch to take proper hold before pressing the pedal K down again to increase the speed; to change to second speed release the pressure from the pedal K and declutch; take the gear lever T and push it forward with a slight outward pressure so that when it arrives at the gate it will lay over to the right and the continuation of the forward pressure will make it drop into the second speed, the position on the quadrant being marked M for medium. This operation of changing should be done deliberately and without waiting in the gate; otherwise the engine shaft will have time to slow down and may cause the gears to engage badly. The same operation is to be followed as from first to second speed until a momentum

HOW TO MANAGE A CARHARTT CAR, WITH INSTRUCTIONS AS TO LUBRICATION, TIMING, CARBURETION, AND COOLING

of ten to twelve miles per hour has been attained. To change to third or high gear, take the gear lever in the hand, ready to pull back to its full extent, but do not press the clutch more than half its travel; otherwise the dogs of the high gear will not mesh easily. If the lever does not move easily through quadrant and across the gate oil at O, Fig. 6. This requires frequent oiling, as dust gets into it.

After the car has attained a speed of, say, twenty miles per hour move the spark lever H three parts the way up the quadrant and then it requires very little touching.

To change from high to second speed care should be taken that

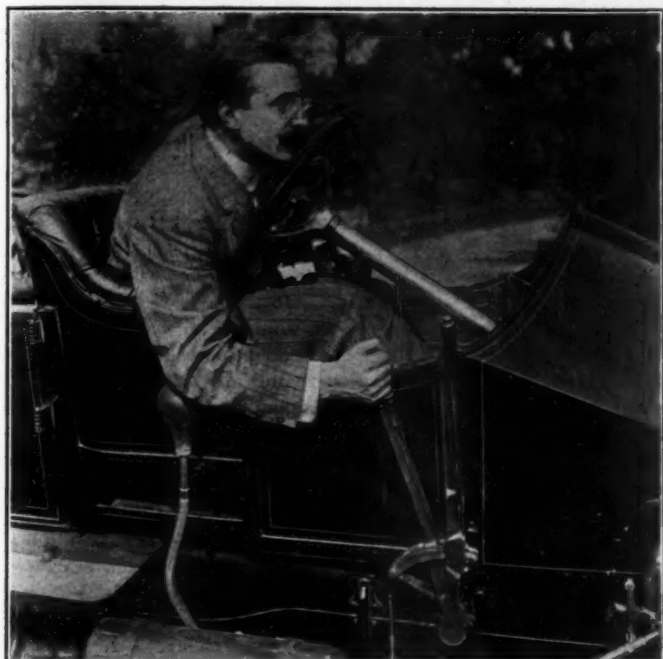


Fig. 4—This position may look racy, but is very tiring and perfect control over the pedals and wheel is lost. Note wrong way of holding knob type lever

the speed of the engine shaft is not allowed to drop too low, and after the clutch is released the lever should be pushed forward as far as it will go, to M, quickly. The same applies to changing from second to low.

The brake, which is operated by the pedal I, in Fig. 2, is powerful and if properly adjusted is sufficient to hold the car under any conditions. The handbrake is conveniently situated (T, Fig. 6) and should be used on hills and in gently slowing up, so as not to give the footbrake too much work and to accustom one's self to using it when an emergency necessitates a quick stop.

The throttle lever H, should be left in such a position that the engine just turns over when the clutch pedal is depressed.

To drain the water undo the plug under the radiator; also the tap W (Fig. 1.) If this is not done some water will remain in the pump, and if it freezes a broken pump spindle will be the result. The greaser on the pump should be given a turn every day. To remove the magneto undo four holding-down bolts under the bed plate, but first mark the dog-clutch coupling.

The air valve A, Fig. 5, needs cleaning from time to time. Do this by pouring a little gasoline on it and turn it round on its seat by the adjusting nut. Slackness in the steering can be taken up by giving a slight turn to nut X. Undo nut Z to lubricate the steering box. To release the inlet manifold undo nuts B.



Fig. 5—Intake side of motor, showing carburetor, steering adjustment, fan belt, tightening nut and adjusters for valves

When the valves are worn the distance between the lifters and valve stems can be regulated by adjusting nuts F, so that a visiting card will just slide between the two surfaces.

Fig. 3 shows how to sit at the wheel and change speed and Fig. 4 how not to do it. There is no necessity to move from the comfortable position shown in Fig. 3. The gear lever should be taken in the hand as indicated so that when you want to use the reverse the index finger is ready to press the knob T. If the position in Fig. 4 is followed command of the steering is lost.

The clutch fork Q, Fig. 2, under curved chassis member needs lubricating every day. P is a plug on the plate clutch boss. Undo this every week and insert a mixture of one-third kerosene and two-thirds lubricating oil.

K is the exhaust cut-out pedal, to operate which press down till it catches in a notch; to release, press it upward with the toe of the right shoe.

To fill gear box with oil the cap P, should be undone. Behind the gear box a ring with a milled edge will be found to lubricate the universal joint and this requires frequent filling with grease; unscrew the ring and the special cap will slide back.



Fig. 6—Control levers on steering for ignition and throttle gear and brake

Injunctions.

- Don't** decide before you see the car whether or not you will like it; the wish should not be father to the thought.
- Don't** look with a prejudiced eye; you might as well not look at all if you refuse to see.
- Don't** let some other pair of eyes do the looking for you; what is the matter with your own? Moreover, the other eyes might be near-sighted.
- Don't** look at the paint on the body while you are thinking of the carbureter.
- Don't** examine the striping on the wheels while you are wondering whether or not a magneto is used in the ignition system.
- Don't** become fascinated with the brightness of the lamps and forget to observe the method of lubricating.
- Don't** spend all your time admiring the straight lines of the body; the cooling system remains to be looked at.
- Don't** go hunting around for a place to put your baggage until you find the place where the tools are stored.
- Don't** just glance at the place where the tools are supposed to be; count them; give a thought to the character of them; a bundle of wire is worth about a nickel; credit the "kit" with all that it has in its make-up, but no more.
- Don't** try to figure out where the spare tire is to be stored on the car; let the maker of the car dispose of such details for you.
- Don't** assume that the lubricating oil can be carried in your hand; let the maker of the car provide a place for it.
- Don't** usurp the position of designer of the automobile that attracts your notice; buy a car that has been designed.
- Don't** assume that a car that looks bad is good. True, beauty is as beauty does; equally true, beauty is an outward sign of an orderly interior.
- Don't** fool with the carbureter and after you put it out of joint assume that it is no good; the chances are that it is as bad as you make it; the equal chances are that any other carbureter will be in the same fix after you get through tinkering with it.
- Don't** expect to go too far on a gallon of gasoline; some of the distances covered (theoretically) on this amount of fuel are past practical mention.
- Don't** start out with a little lubricating oil; have as much as there is storage room for; it is marvelous how much damage that can result from the absence of lubricant for just five minutes.
- Don't** fall in love with the magneto to the extent of neglecting the battery ignition; an old friend comes handy in a pinch.
- Don't** expect a battery to be in good working order after it has stood in idleness for a year and a day; it may be a wizened old man incapable of active service when you get to it.
- Don't** neglect the wiring; it should be examined at regular intervals; poor joints offer a high electrical resistance and defeat service.
- Don't** assume that the wiring is perfect simply because the joints are in good order; there may be a fault in the wire under the insulation at some point; feel along the insulation until you come to a spot that indicates lack of continuity, just as a doctor examines for a fractured bone in the arm.
- Don't** neglect the contacts in the magneto and timer; they have to stand a large amount of rubbing and in time the effect is to wear them out; replace them at the right time.
- Don't** allow grease to remain on the surfaces of the insulation of the wiring; grease and rubber, of which the insulation is made, are far from good friends; unfortunately, grease gets the better of the argument.
- Don't**, under any circumstances, fail to grease all the little joints around the chassis; grease is the keeper of the bearings.
- Don't** allow mud to dispossess the grease that is placed to lubricate and protect the bearings; if the grease is present in quantity sufficient to fill the space mud cannot get in.

Hints on Care of Tires

AFTER four years' experience I am confident that the solution of the automobile tire problem will not be found in discarding the pneumatic tire for some other kind, but in selecting the best pneumatic on the market and giving it proper use and care.

When an owner finds that two sets of tires do not give the same amount of wear, he frequently concludes there is defective material or workmanship in that make of tires, forgetting that conditions of service vary so widely, and that drivers are often heedless about starting suddenly, and careless about the many little things that seem insignificant to them, but which affect tremendously the life of his tires. The service received depends as much on the proper care as on the quality of the rubber and workmanship.

Observe carefully the different automobiles you pass and you will notice that a large percentage of tires are used without being properly inflated. Ask the driver, whose tires disintegrate rapidly, and who is constantly complaining about blow-outs, if he keeps his tires as highly inflated as the manufacturers request and invariably he replies, "No." Usually he has no knowledge as to the amount of air his tires contain.

Often the driver never thinks of his tires until he observes they are nearly flat; or else he is ignorant of the fact that when a tire is imperfectly inflated the walls bend back and forth, with the same result as when you bend a piece of wire back and forth in your hands; it weakens and breaks. Few tires are strong enough to stand the heat engendered in the threads, the weight of the car, combined with the air pressure and gross carelessness. The most remarkable thing about the pneumatic tires is that they last so long in view of the ill-use and improper care they so often receive.

If drivers would be sure that their tires are properly inflated before starting they would find that rim cutting, which is caused by the play between the rubber and metal of the wheel, would seldom occur before they are fully satisfied with the mileage received. Remember you cannot always tell from appearances whether or not your tires are perfectly inflated. A good gauge should be secured, and then it will be the exception when a good tire will not travel five thousand miles.

Another improper use to which pneumatic tires are put is constant overloading. Every car should be carefully weighed and the equipment and load carefully considered, in order that the driver may have a margin of safety and not carry more than the tires were made to stand.

You do not expect your boy to do as much work as you do because he does not possess your strength; neither should you be so unfair as to insist that your tires shall do more work than their strength warrants.

Again, owners are careless about tire shoes when the car is in the garage. Often the car will not be used for long periods of time. Instead of jacking up the car and taking the weight off the tires and partially deflating them, they stand just as the car was placed when the last trip ended. This exerts a continual and unnecessary strain on the walls of the shoe.

But if time is taken to jack up the car and partially deflate the tires the life of the shoes will be materially lengthened; as then they will be called upon to bear only the pressure of the air with which they are inflated. This is slight compared to the strain they must bear when they support the weight of the car. And if one will follow this course the life of the tires will be increased by about one-half the time the car stands idle.

Care should be taken that the car does not stand with deflated tires without being jacked up. Watch carefully that the tires

REV. PERCY R. FERRIS SAYS: "SOLUTION OF THE PROBLEM DOES NOT LIE IN DISCARDING OF PNEUMATICS; SELECT THE BEST AND GIVE THEM CARE"

do not stand in oil or grease and wipe off any oil that may drop on the tires. Oil greatly softens rubber and takes away its resistance and elasticity.

In cold weather, if it is desired to lay up the car, the tires should be removed from the wheels and after carefully wiping off all oil or water wrap them up in a soft cotton cloth to keep out the light; then put them where the temperature will be moderate. If you leave your tires in the direct rays of the sun, or in a very warm place, the rubber will quickly lose its elasticity and become hard and cracked. A few months of such treatment will destroy the life of the best tires.

Be careful in driving your car for the sake of your tires if for no other reason! Careless driving causes more harm to tires than we dream of. Start your car gently and with your mind on what you are doing. Take every corner at a moderate pace and do not stop suddenly unless unavoidable. When curves are taken at high speed the strain on the sides of the tires is detrimental. Carry tire chains for wet roads to prevent skidding, which is a very dangerous experience to tire, car and driver.

In driving up to a curb never let your wheels rub against the curbing as you come to a stop, for it will wear out the rubber at the thin point of contact and is liable to bend the rim and pinch the shoulder of the shoe. If possible to prevent it, do not permit your car to run in a rut, as it is liable to greatly injure the tires; and never apply your brakes suddenly unless forced to do so by some emergency, because when the wheels cease rotating before the car stops the tires drag and wear tremendously.

Examine your tires at frequent intervals for cuts, which as soon as found should be washed out with gasoline and rubber cement or plastic put in the gash. Then bind with tape and leave it wrapped with the tape until the car is to be used again. At the first opportunity the cut should be vulcanized to prevent mud-boils and sand-blisters. The maker is the proper one to repair the tires, as it is to his interest to see that the work is well done.

Just as soon as the fabric is exposed the shoe should be sent to the factory, if the owner desires to preserve the fabric, and prevent permanent injury. When proper care is given, and the tires are not weakened by bending or by extra strains, the fabric should retain its strength indefinitely. But let the moisture penetrate the tire and at once the fabric begins to disintegrate and lose its power of resistance. As long as the fabric can be preserved blow-outs will not occur, though it tears comparatively easy once it is cut or injured. Kept in proper condition it will resist severe strains for a long time.

Remember the wheels of every car should be examined occasionally to see that they run parallel to each other in order that the tires may not be subjected to a grinding action which wears out the tread rapidly. Look over the rims at frequent intervals to detect dents or rust. It is quite easy to dent some rims and often the edges wear down to such a sharp edge that rim cuts result.

Just a word about the care of extra casings. It is so much easier to change tires in case of trouble than to repair old ones that few owners drive without carrying the extra shoe.

It is the part of wisdom to change your tires from left to right and vice versa at least once a year to distribute the wear as evenly as possible. Place good covers over your casings and secure them on the car so that there is no danger of chafing. Put the cover over them so carefully that no water can enter.

And when you place your tubes in the shoes sprinkle plenty of soapstone within, so that friction may be reduced between the casing and the tube, and the heat which is so often generated by this friction prevented.

Instructions.

When the carbureter becomes unruly the difficulty may be:

- (a) Nozzle too large.
- (b) Nozzle too restricted.
- (c) Needle in nozzle not properly set.
- (d) Depression too low.
- (e) Depression too high.
- (f) Too little initial air.
- (g) Too much initial air.
- (h) Too much auxiliary air.
- (i) Too little auxiliary air.
- (j) Float too high.
- (k) Float too low.
- (l) Passageways stopped up.
- (m) Air locked.
- (n) Pocket of water.
- (o) Float punctured.
- (p) Mechanical interferences.
- (q) Leak around manifold flanging.
- (r) Adjustment awry.
- (s) Filter stopped up.
- (t) Low pressure.
- (u) Control system awry.
- (v) Carbureter too small.
- (w) Carbureter too large.
- (x) Manifold not right.
- (y) Poor gasoline.
- (z) Gasoline not turned on.

Remedies for A to Z Carbureter Troubles—

- (a) Fit smaller jet or solder up orifice and redrill.
- (b) Use taper reamer.
- (c) Adjust till correct position is found.
- (d) Fit lead washer beneath jet base.
- (e) File top of jet or better reset needle valve.
- (f) Drill a few additional holes at convenient places.
- (g) Fit shutter, locked by a set screw.
- (h) Increase tension on spring or block up ports.
- (i) Decrease tension of spring, enlarge slot and ports.
- (j) Unsolder balance weight holder ring, lower same on needle and solder or weight down float equally with a little solder.
- (k) Unsolder balance weight holder ring and raise same.
- (l) Unscrew same and clean them, using air pressure (tire pump); don't use pins in the jet.
- (m) Unscrew gasoline pipe from carbureter and allow gas to flow through, look to stoppage in hole of filler cap in gravity-fed cars.
- (n) Same as (l).
- (o) Drill another small hole, blow or boil gasoline out and solder.
- (p) Disconnect carbureter entirely, thoroughly clean out, verify everything, and if it does not then work have some one put it in order that understands how to.
- (q) Replace old joint by a new one; if you haven't a new one make one from stout brown paper and boiled oil or white lead.
- (r) Readjust but leave jet alone; if it ran all right once it will do so again unless the motor is worn badly.
- (s) Disconnect and clean out; should be cleaned once a month.
- (t) Clean pressure valve and go over all connections, copper pipes sometimes split at the seam.
- (u) Readjust and tighten up, or if worn take up play.
- (v) Fit larger carbureter.
- (w) Try adjusting jet and closing ordinary air intake; if it will not work, fit smaller carbureter.
- (x) Consult makers of car or engine and have a new one made, patched induction pipes do not work well.
- (y) Empty out every drain of old gasoline and pay more money and get better quality, or if the dealer has only one quality go to another dealer, or better still, buy direct and store it yourself if you have the convenience.
- (z) Turn it on.

Letters

COMMUNICATIONS FROM READERS MAINLY ALONG TECHNICAL LINES; MOST EFFICIENT ORDER OF FIRING FOR SIX-CYLINDER CARS; STARTING WITHOUT A CRANK; FAST- AND SLOW-MOVING VEHICLES ON CROWDED STREETS; INSTALLATION OF PYROMETERS.

Order of Six-Cylinder Firing

Editor THE AUTOMOBILE:

[2,398]—I am a subscriber for years. Please inform me how a six-cylinder motor should fire. I have one that fires 1-3-5-6-4-2.

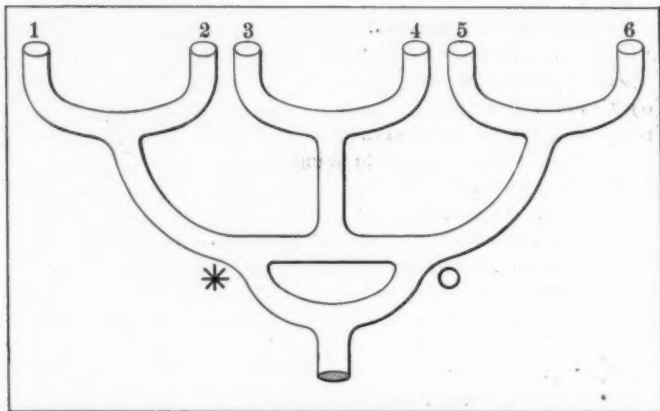


Fig. 1—Showing one type of six-cylinder induction pipe

A mechanic claims it should fire 1-4-2-6-3-5, as the gas can be gotten to the cylinders with more uniformity. The intake is designed so as to have 1 and 2 draw together, 3 and 4 together and 5 and 6 together. When this auto is on a State road going 25 to 30 miles, it runs smooth and good, but when on rough roads going slow the cylinders fire irregular and bother. Another claims faulty construction of intake manifold (Fig. 1).

Is it best and of proper design? If not please give me information to have a better one made. I do not mention maker's name. If you can assist me please inform me. The auto is very satisfactory, but engine, six-cylinder $4\frac{1}{2} \times 5$ geared $3\frac{1}{2}:1$, does not give good results; weight 2,800 pounds. It does not do near as well as my four-cylinder, $4\frac{1}{2} \times 5\frac{1}{4}$; weight 2,950 pounds.

Forgot to state that a duplicate of this six-cylinder, in a boat, was helped by closing the pipe marked O and drawing supply through place marked * (Fig. 1).

Can you assist me?

Syracuse, N. Y.

EDWARDS.

Without knowing the make of car it is impossible to tell you the firing order, as the following table will show that different makes of six-cylinder engines fire differently. Perhaps you will find your engine in the list:

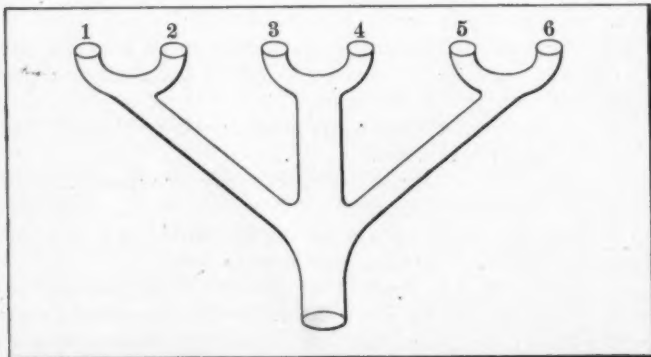


Fig. 2—Suggested alteration in shape of induction pipe

Pierce-Arrow	fires	1-5-3-6-2-4
Winton	"	1-5-3-6-2-4
Lozier	"	1-2-3-6-5-4
Peerless	"	1-3-2-6-4-5
Matheson	"	1-4-2-6-3-5
Stevens-Duryea	"	1-4-2-6-3-5
Knox	"	1-5-3-6-2-4
Alco	"	1-4-2-6-3-5
Thomas (K)	"	1-4-2-6-3-5
" (L)	"	1-3-5-6-4-2
Franklin	"	1-4-2-6-3-5

It will be seen that there is only one engine that fires in the sequence that you give.

With regard to the induction pipe this appears too complicated, besides having too many elbows against which the rush of gas has a chance of condensing before reaching the cylinders.

The shape of induction pipes is dependent on the sequence of firing, and is more a matter of trial and error than actual theory. The majority of six-cylinder motors have their cylinders cast in pairs with only three ports to feed, and it is then a very simple

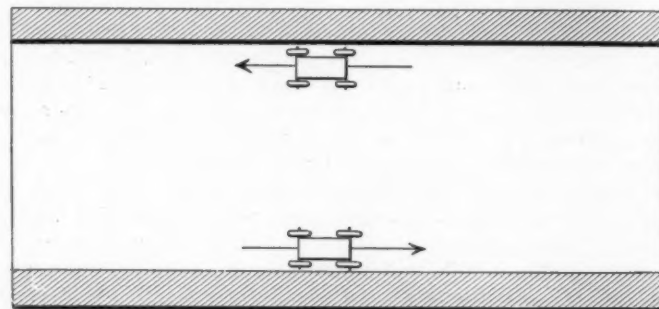


Fig. 3—Slow moving freight automobiles passing each other, both keeping to the right in order not to obstruct the positions that belong to quick moving automobiles

matter. The method shown in Fig. 2 is a suggestion that might suit your engine, but without more data we cannot recommend it as being a sure cure for your troubles.

Wanted: A Disinterested Party

Editor THE AUTOMOBILE:

[2,399]—Am now trying to decide which car (Roadster type) to buy and was very much interested in your "don'ts" of last week. They really do not help an inexperienced buyer very much in selecting the best car for the money. Could you refer me to some disinterested person to whom I can apply for advice and have him answer a couple of questions like these: "What car costing under \$1,000 or \$1,200 in your judgment would give me best service (Roadster)?" Also: "What car costing less than \$1,500, etc.?" and have him tell me why. Whether this scheme would work I do not know, but would like your opinion. Would be willing to pay a reasonable price for the advice, of course. Thanking you in advance, I am, yours very respectfully,

WM. RYAN.

Muskogee, Okla.

With reference to your esteemed favor of the 5th inst., we think that you will have a difficulty in finding a disinterested party to advise you. We are glad you are interested in the "Don'ts" that appear in THE AUTOMOBILE, but the choice of the car is dependent upon certain local conditions and the work that you intend to put the car to.

You can find several people who will give you advice upon a second-hand car as to its wear and value, but with a new car the case is not the same.

Personal demonstrations and opinions of users of the car are the best criterion.

Starting a Car Without a Crank

Editor THE AUTOMOBILE:

[2,400]—Is it possible to start a car if the starting handle has been damaged or lost?

Endeavoring to turn the motor by the flywheel is a very dangerous operation and should not be resorted to. If there is any one else in the car put the car in the high gear, inject a small quantity of gasoline in the cylinders and let the car be pushed with the clutch out. After a little momentum has been attained let the clutch in softly and the engine should start even on magneto. If alone, however, jack up the rear wheel, put in the high gear and turn in the forward direction.

H. W. M.

Trenton, N. J.

Slow Moving Automobiles to the Side of the Road

Editor THE AUTOMOBILE:

[2,401]—Is there any law that makes it mandatory for slow-moving automobiles to get out of the way of speeding cars?

H. L. S.

New York City.

Questions such as this are handled under the head of "police

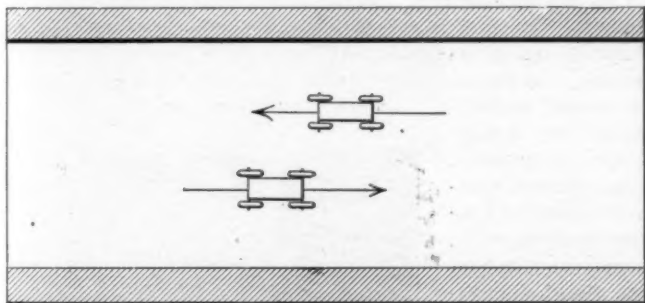


Fig. 4—Quick moving passenger automobiles passing each other, occupying a center position in the street, leaving room for slow moving automobiles at the sides of the street

regulations," and the police power of the respective States is sufficient for the purpose. If the police are instructed in accordance with the spirit of city ordinances, and have among their instructions those which require them to so regulate traffic that freight automobiles are directed to keep to the sides of the street, for the purpose of making way for the faster passenger automobiles, it may be regarded as well within the law. Figs. 3 and 4 show the right positions for freight and passenger automobiles under such conditions, it being assumed that the freight automobiles will be slow moving, relative to the speed of passenger automobiles, but it will be understood, however, that passenger automobiles are not given the right to violate the fundamental speed laws simply because they are given the right of way.

Moving Wire Not Necessary

Editor THE AUTOMOBILE:

[2,402]—I am much interested in magneto ignition work, and would like to have you state whether or not it is necessary to employ armatures with moving wire, provided some means is utilized for varying the magnetism.

Erie, Pa.

C. R. S.

An electromotive force will be induced into the wire whether or not the same is placed upon the rotor, provided the magnetic fluxes vary. Flux variations may be brought about by making and breaking the magnetic circuit. This is a mere matter of utilizing the rotor, one form of which is shown in Fig. 5. In this example, the coils of wire are placed on cores formed out of the polar horns. The cores are in the path of the magnetic flux, and the magnetic circuit is interrupted by the rotor, due to its shape. This form of magneto will be highly efficient if the general design is properly looked after, provided the permanent magnets of the magneto are made of a proper grade of tungsten steel, and are suitably magnetized for the purpose.

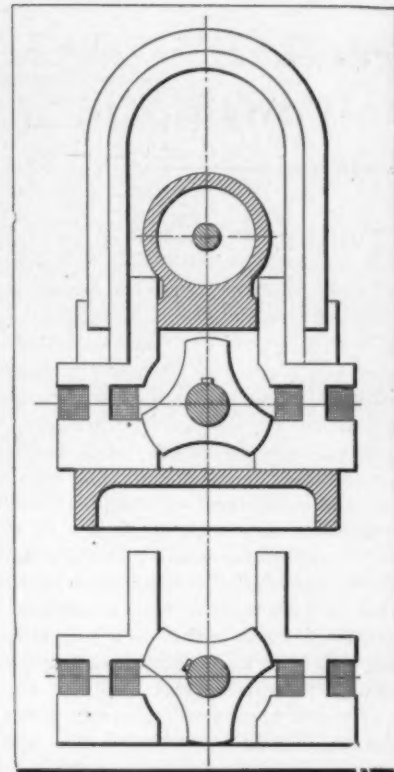


Fig. 5—Cross-section of a rotor type of magneto with fixed coils embedded in the soft pole pieces, eliminating the use of wire on the moving parts

As to the Use of the Pyrometer

Editor THE AUTOMOBILE:

[2,403]—What is the best way to use the pyrometer in connection with furnaces?

O. J. M.

White Plains, N. Y.

The illustration Fig. 6 as here given will be sufficiently clear to require no further explanation, unless to point out that the measuring instrument is very delicate, and should be placed in a well lighted room so that the observer will be able to note the readings with precision. Attention should be given to the means at hand for maintaining the proper temperature of the cold end.

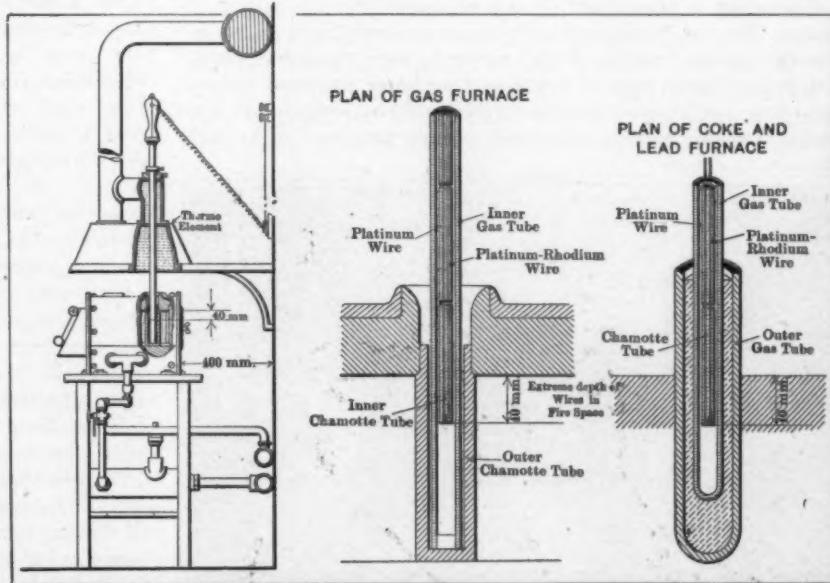


Fig. 6—Illustrating the installation of pyrometers in gas furnaces for heat treatment work

Touring in a Runabout

JAMES S. MADISON RELATES SOME EXPERIENCES WHILE TOURING IN A RUNABOUT THAT ARE PLEASANT TO READ AND INSTRUCTIVE AS WELL

THE average runabout of small wheels and light weight is not intended for touring purposes and is poorly adapted to such use. No matter how ambitious the owner of such a car may be or how much confidence he may have in his car he should be rather wary about attempting a tour unless he is entirely willing to take chances and meet his trouble philosophically when it comes. The most serious objections to all the popular runabouts are their short wheelbase, light weight, small wheels and consequently small tires. Each of these factors helps to render them unsuited for long trips over all conditions—good, bad and indifferent—of roadbed. The total combined effect is to transmit a very large proportion of all road shocks, from whatever cause, to the power-plant, transmission, body of the car and to the passengers. Under these conditions touring more nearly approaches a torture than a pleasure. The storage space on a runabout is also limited to a very small amount so that one cannot take with him the necessary spare parts for emergencies, or suitable wearing apparel.

It should always be remembered that the runabout, as its name implies, is intended for town use, and for such portions of the country as have advanced to the point of good roads. I have in mind a popular 20-horsepower, four-cylinder runabout that on the splendid, level, oiled roads of eastern New Jersey would give most excellent satisfaction as a touring car. But if this same car were used for the same purpose in the western part of the State or on the average roads of Maryland or Pennsylvania the result would be disastrous. There are, however, runabouts that may be used with great satisfaction for long tours. In the writer's judgment the necessary requirements are these: The wheels should be at least 30 inches in diameter, the tires should be large, not less than 3½ inches in diameter—a 4-inch tire would be better—the car should be provided with excellent springs—springs that are merely "good springs" will not answer—and it must be sturdily built throughout. It ought to weigh not less than 1,400-1,600 pounds, and have an engine capable of developing 15 to 18 horsepower at the wheels. There must also be plenty of storage space. With a car of this type one may take tours of any desired length with but very little trouble.

Following is an account of one of many trips the writer has taken. The car is equipped with unusually large tires, 31 x 4 in.; for this reason partly and also partly because the car is usually not driven faster than 16 miles an hour there has been remarkably little tire trouble—two punctures and one blow-out in 7,500 miles. On this account it has not seemed necessary to be both-

ered with carrying a spare casing. A blow-out sleeve and two extra inner tubes have answered perfectly all demands up to the present.

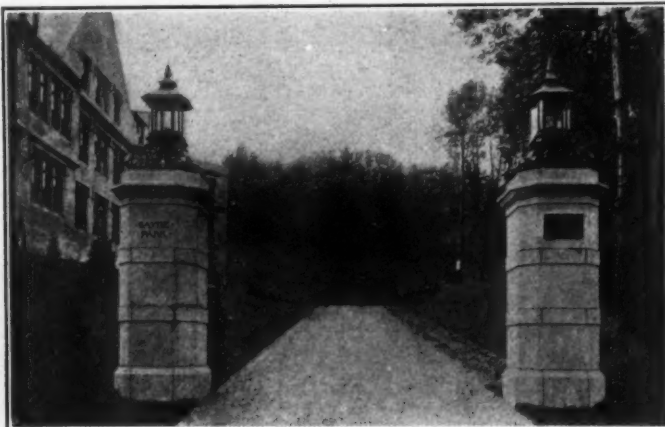
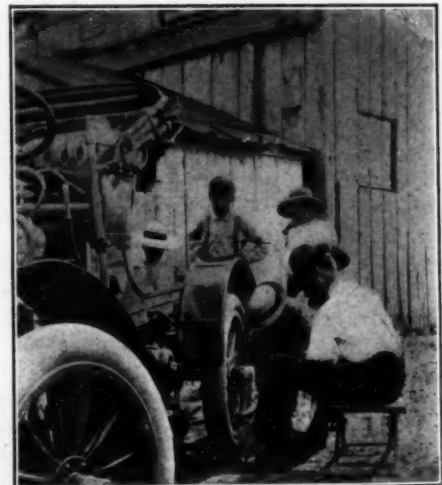
A June Trip from the Delaware to Gettysburg

The party consisting of one and one other started from Easton, Pa., in a two-cylinder, air-cooled, fifteen (manufacturer's rating twenty, by A. L. A. M.) horsepower runabout, provided with a commodious rear box, in which were stored chains, curtains, spare parts and our personal belongings. Instead of placing these in the usual suit case, they were wrapped in a linen folder about five feet long by three feet wide, containing a number of pockets of different sizes for various articles, combs, brushes, cuffs, etc. We expected to be gone three or four days and our requirements were strictly limited to the articles absolutely necessary for that length of time. One of the indispensables was an eye-cup and bottle of eye-wash. The writer always finds after a day's run in the sunlight, over dusty roads, with the constantly changing focus of the eyes on the road, that they become inflamed and uncomfortable. The eye-cup and wash bring much relief.

The day was June 29; the sky was clear, the temperature 68 degrees. The first stop was made at Bethlehem after an exhilarating run of seventeen miles over a fine State road oiled all the way. At the corner of Broad and New streets, Bethlehem, we turned to the left (south) on New street, followed it across the Lehigh River (excellent view of the enormous plant of the Bethlehem Steel Co. from the bridge) into South Bethlehem. Continuing straight ahead for about one-third mile we entered the beautiful campus of Lehigh University. The roads inside the grounds are of the most approved macadam construction. All of them lead to Sayre Park, a vast tract of wild, but most

Spectators congregate to see the trouble beautiful mountain land that the university has cared for so successfully that it is one of the show places of eastern Pennsylvania. A perfect macadam road of about a mile and half in length goes right through the heart of it, affording at many places a view of a magnificent panorama extending for thirty miles or more. The tourist going through Bethlehem who fails to take in this side trip of about five miles in all is missing a rare opportunity.

From Bethlehem we ran on to Allentown over five miles of oiled macadam. The next stop was Reading, thirty-seven miles from Allentown, over a road that was fair dirt for much of the way, and good pike the remainder; the last five miles of it was of the same quality as the glistening white sand roads of New Jersey. On approaching the city we saw the now famous sign painted on a large white square board surface: "Automobilists Speak Well of Reading. May We Speak Well of You?" We drove to the square in the center of the town, where we had a



Entrance to Sayre Park, Lehigh University, South Bethlehem, Pa.

light luncheon in a department store—a plan we followed wherever possible. We found the food satisfactory and the expense lower than at the usual restaurant.

During the afternoon we ran on to Lancaster, thirty-six miles, good road most of the way, and then on to Columbia, ten miles farther. Here I made the first mistake in deciding to spend the night. The town is not attractive and the accommodations poor. It would be much better to go on to York—fourteen miles farther.

At Adamstown, a small village between Lancaster and Columbia, it was necessary to take on gasoline. After fifteen minutes' diligent search, a man was found who had some. He filled a four-gallon can by means of a quart measure; the can, measure and funnel were originally tinned, but long use and exposure had obliterated every sign of tin and left only a coating of iron rust. Since the oval funnel with gauze screen which had been purchased especially for such occasions had been forgotten, a



A little oil to keep things going

handkerchief was used for a filter and the gasoline poured through that—a wise precaution, for there was about a quarter teaspoonful of sediment caught.

On the morning of June 30 we left Columbia, passing through York and arriving at Gettysburg about noon, a run of fifty-two miles. The road up to the last ten miles was good, but that is the worst road in eastern Pennsyl-

vania. The average driver's remarks about that particular piece of devilry are unprintable. I must content myself by saying that it is a disgrace to any civilized community. The fact that it is a toll road and one is obliged to pay for the privilege of going over it makes the imposition all the more shameful.

We spent the afternoon in Gettysburg seeing as much of the battlefield and of the National Cemetery as possible. In spite of the magnet that draws over a hundred thousand visitors there every season, Gettysburg is not a pleasant place to visit. It is a provincial community whose principal industry is taking care indifferently of the strangers who want to know about the battle fought there forty-seven years ago.

The hotel at which we stopped was so burdened with flies that each guest in the dining room was supplied with a fan to keep them off the food and out of his mouth. The waiters, when not busy, stood back of one's chair and aided in keeping the pests at a safe distance.

We left early next morning (having been awakened by squealing pigs and crowing chickens) with great enthusiasm for the thirty-eight mile run to Harrisburg. For twenty-eight miles this road out of Gettysburg was also very bad. Water bars, deep ruts, rough surface, loose stones, etc., tell the unpleasant tale. When within ten miles of Harrisburg the signs became encouraging—we knew we were getting out of the backwoods into civilization. The last lap to Harrisburg was delightful. The city itself is most attractive, with many miles of modern streets and many beautiful parks. From this point we ran on to Warnersville, where we spent the night, forty-four miles over what was at one time a fine pike. At present it is badly worn in spots. The method of repairing the roads is a senseless one, although it seems to be general in Pennsylvania towns and counties. When a soft spot appears in the surface, it is allowed to go until it becomes a hole or rut and it is then



The Junction, Sayre Park, South Bethlehem, Pa.

closed up by dumping broken limestone in it; the passing vehicles are expected to crush it—and they do, except what they scatter to the side and ahead. This sort of repairing is primitive and and stupid, and also exasperating to the man who is trying to make a set of tires guaranteed for 3,500 miles give him that mileage. The next morning we ran to Reading, ten miles; from there we followed the same route by which we came back to Easton. The total mileage for the entire trip was 311; the gasoline consumed, 24 gallons; the total expense was \$35. Of this amount \$2.65 was paid for toll, most of it in small sums. The toll gates in Pennsylvania are a relic of the dark ages. They are a great nuisance to the motorist; not the matter of the expense, but the frequent stopping. Many times one has to wait for a woman to leave her washtub or other household duties to come for the toll. As a general principle I should say it would be decidedly more economical and certainly more satisfactory for the average tourist to avoid Pennsylvania, and take out a yearly license in New Jersey. The cost of the toll will almost pay the annual fee, and I calculate that the damage to tires will be about ten times greater in Pennsylvania than in New Jersey. Upon examining the tires after returning, the tread of each casing was found to be hopelessly cut up by the loose stones, and while all the casings were old, having been driven 4,400 miles, it was evident that nothing would save them except a retread for each at a cost of \$14 apiece.

A Word of Advice as to Tires

Concerning tires, have the best that money can buy, and by this it does not necessarily mean the dearest; but a tire that has given good results to others should give the same to you if you treat them properly. It is better in the long run to have a larger size tire fitted to the car even at an extra cost than to run on tires that are overburdened, and in this particular communicate with several tire companies and find out what they consider the correct size should be for a given weight, and while speaking about weight insist upon a specific weight being given you by the maker of a car and not "Oh! about so and so many pounds." Sometimes through lack of knowledge and sometimes through desire to make the weight appear as small as possible the question is evaded in this manner. You can get anything in the way of information if you insist.

Salesman Made a Grave Mistake

Purchaser: "Say, man, there is a mistake in this bill."

Salesman: "Oh, no! You are quite mistaken, the bill is right."

Purchaser: "I tell you there is a mistake in this bill."

Salesman: "I tell you there ain't! The bill is right."

Purchaser: "I tell you there is. I've got more money than that!"

Questions That Arise

CONCERNING THE BEST PROCESS IN MAKING A NOISELESS MOTOR; USE OF PRUSSIAN BLUE IN SCRAPING CRANKSHAFT BEARINGS; INFLATING TIRES WITH CARBONIC ACID GAS

[251]—What are the choices in the process of making a noiseless motor?

The first choice would be in favor of a design that does not utilize gears of any kind. The second choice would be in favor of a design that utilizes the least number of gears, and advancing this reasoning further, it would be proper to point out that selecting the types of gears that are most noiseless in their performance would be rational. Fig. 1 will help in the reasoning process; it shows two schemes of gearing considering a motor with two camshafts. The scheme at the top presents the pinion on the crankshaft, and the two halftime gears on the respective camshafts with center distances a . Should there be but one camshaft, as in the L-cylinder designs, the halftime gear system and one large gear only would suffice. The lower diagram of Fig. 1 shows the pinion on the crankshaft, a lay gear above, and the two halftime gears in mesh with the lay gear. This is probably the most extravagant use of square cut gears that can be found in practice. The question of noise as it relates to these plans is very much involved in the center distances a between the meshing gears. If these distances are exactly right, and the gears are accurately cut, noise is reduced to the point where the muffling effect of the enclosing case renders the performance quite satisfactory. If the distance a is not right, no one of these plans would be worth considering, and so it would appear that noiseless performance does not depend so much upon the scheme employed, as it does upon accuracy of workmanship. If jigs are used in each case, it is no more difficult to use the plan

with the two camshafts and the lay gear than it would be with one camshaft and one halftime gear meshing directly with the pinion.

Fig. 2 shows a plan that was used on the Moore motor, em-

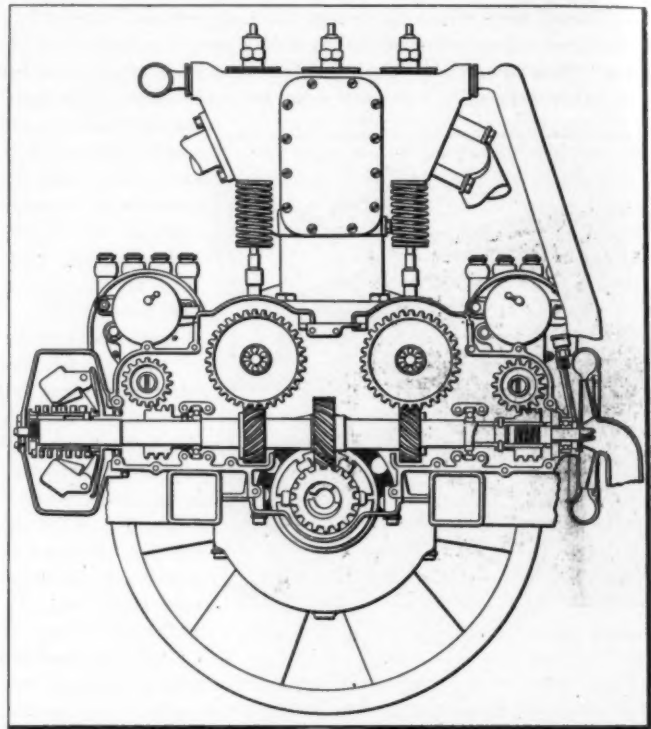


Fig. 2—Spiral gear system used on the Moore motor for driving the camshafts and magnetos

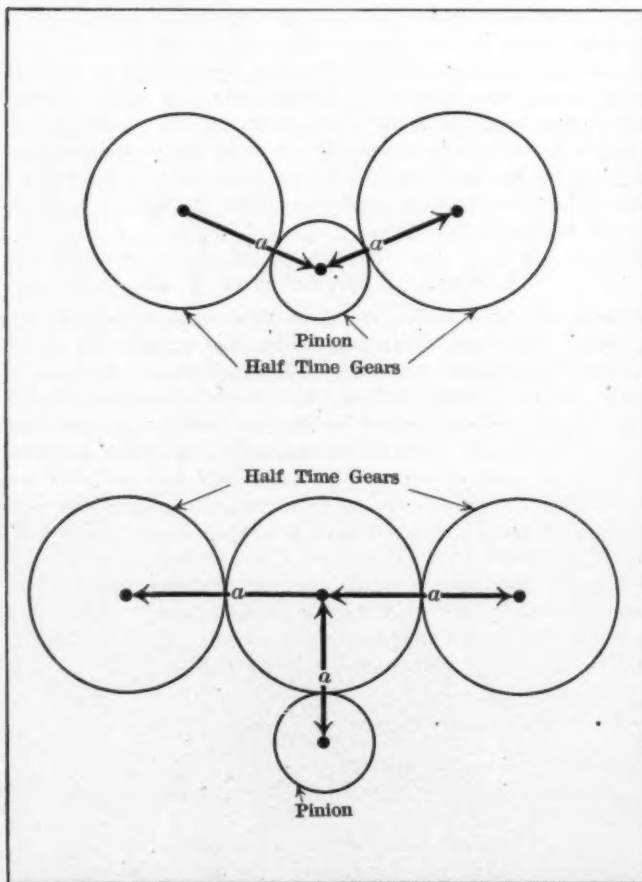


Fig. 1—Diagrams of the schemes of halftime gearing as used in automobile motors

ploying spiral gears, they being quite noiseless. The spiral pinion on the end of the crankshaft drives a laterally disposed shaft and the two camshafts are driven through pairs of spiral gears, one of which on the lateral shaft and the other on the end of the camshaft in each case. This lateral shaft also affords the driving means for the magnetos, of which there are two shown, and while this is an example of the profuse use of gearing, the fact remains that the performance was noiseless and satisfactory.

[252]—What is the character of the blue pigment which is used by machinists when they are scraping in crankshaft bearings?

Text books give for "Prussian blue" the name ferric ferrocyanide. Commercially, no such material is known. The blue that comes in tubes is made of Williamson's blue with perhaps other iron-alkali or cyanides, and perhaps aluminum-iron. The best way is to purchase this blue in these small tubes, very little being required in the scraping in of the motor. The mistake that the average workman makes lies in the profuse application of Prussian blue during the scraping operation; a perfectly even perceptible smear is all that is required.

[253]—Does inflating tires with carbonic acid gas have a detrimental effect on the rubber of the tires?

This method has been employed a good deal and no harm seems to come from the use of CO_2 , but with heat generated by the friction with the road surface the gas expands and in Summer allowance must be made for this. What must be guarded against in pumping up tires is the use of exhaust gases from the engine; these have a detrimental effect.

A Tenement House Quarrel

MOTOR DRINKS TOO MUCH GASOLINE; MAGNETO COMPLAINS ABOUT OVERWORK; SPARK PLUG IS MISSING

"DRINKING gasoline cocktails," said Mrs. Magneto to Mr. Motor, "will bring you to an early grave; it takes all my time, no matter how much of a cat I become, spitting fire continuously, to keep you from having your system all clogged up with the carbon that gasoline tracks on its nasty feet; I told that fellow, Carbureter, who lives on the other side of you, to close the door which leads from his gasoline cellar, but he seems to be a most unaccommodating neighbor at best."

"Come now, Mrs. Magneto, please don't scold," said Mr. Motor. "You know very well that Dr. Quack prescribes gasoline cocktails as a regular diet for me."

"True," said Mrs. Magneto, "but you forget that Dr. Quack did not tell you to drink so hard; don't you know that you always have stomach trouble every time you take too much?"

"Aye, it is just as you say," said Mr. Motor. "I must get after that tenant of mine, Carbureter, and give him to understand that it is against the law to keep open after hours. Even if I am his most persistent customer; the best way to reform myself is to compel Old Carbureter to obey the excise law."

Now, little Miss Timer was listening to all this talk; she lives in a most inaccessible flat just back of Mr. Motor, facing Squire Flywheel's place. When conversation died out, little Miss Timer made bold to have a say: "Oh, Mr. Motor, aren't you afraid to put the law on Old Carbureter? Just suppose, for a moment, that you were to be cut off from your regular diet of gasoline cocktails, then what?"

Mr. Motor, never thinking that little Miss Timer was anything but a most giddy little child of poor parentage, awakened from his lethargy (having indulged in too much gasoline for over a week) and, touched by the solicitude of the girl, said, "Good for you; who would have thought it? I feared that you were so busy flirting with Willy Contact that you didn't know beans."

"Just to think of it, me flirting with Willy Contact? Never; I gave him his marching orders last week," said Miss Time. "Willy was limping around for several hours, kind a sour like; he seemed to be afraid of me, and the result was that I was all covered with the black dust that he kicked up every time he fell over something. I made up my mind that his spring was not working properly, and seeing Dr. Quack down there talking to Judge Battery, I called and he sauntered up to see me. Well, I told him of my suspicions and he agreed with me. He grabbed Willy Contact, took off his coat, and after looking him over carefully said: 'Willy, you certainly are in need of a bath; for the present I will be content to give you a new spring, but if I come around here again and find you with a dirty face, I will give you the bath of your life.' Willy said, 'Dr. Quack, Ounce-of-Prevention knows more about it than you do; had he been around I would not have had to eat my spring when I got hungry; he would have fed me some vaseline.'"

Just then a great commotion was heard up in Magneto alley; Willy Contact and the rest rushed away to see what was the matter, and just as they rounded the curve leading by Centrifugal Pump's house, they heard Fauntleroy Startingcrank say, "What do you think? Them Sparkplug boys have been sparking so long that every one concluded that they would marry and settle down, and now one of them is missing."

Helping a Novice Start His Engine

The other day I ran across Carrington on the train. Carrington lives near me and owns a Hurriup runabout and a touring car. Naturally we talked automobiles.

"It is a funny thing," said Carrington, reflectively, "how much

a greenhorn can do to make trouble for himself. Yesterday I went to call on Gray, who lately bought a runabout like mine and is learning to run it. I got to Gray's house a quarter after three and was welcomed with more enthusiasm than if I had risen from the dead. I soon learned why. Since ten o'clock that morning Gray's man, aided by a chauffeur and helper in the garage nearby, had been trying fruitlessly to start the engine of Gray's runabout. Glad to see me? I should say they were!

"As Gray's runabout was of the same make as my own, I had a good idea of how to begin. For the fun of the thing I turned the crank two or three times, but of course without result. I noticed, however, that there was no compression whatever, absolutely not the faintest suspicion of it. On asking what they had done, I learned that in their efforts to prime the cylinders they had squirted gasoline by the cupful through the spark plug holes, and the gasoline naturally had cut every vestige of oil from the pistons. I took out the spark plugs to inject oil on top of the pistons, and found that the points of the plugs had been spread apart, I am positive, a quarter of an inch. Who did it, or why, I failed to learn; but of course no spark would jump that gap under compression. With oil supplied, the chauffeurs who had been cranking all day made themselves useful by cranking a little more, till the piston rings were properly oiled, and would hold compression. Meanwhile I had set the points of the spark plugs a thirty-second of an inch apart, as they should be. I then tested the batteries and found them O. K.

"With the surplus gasoline worked out of the cylinders, and with proper compression and good sparks, I expected to see the engine start. I primed the carbureter and the crank was turned. The engine gave two or three spits and stopped. I turned the crank again. Two or three spits followed, and again the engine stopped. The third attempt resulted likewise."

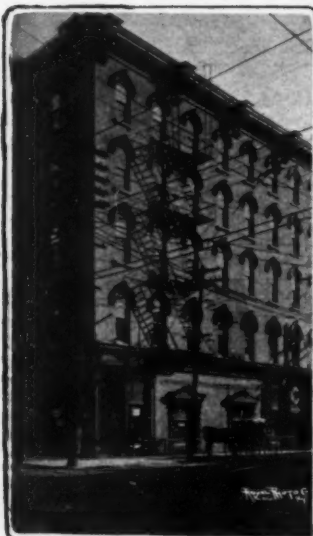
"Sounds as if the gasoline pipe was partly stopped," said I. "Stopped? The gasoline was running a stream every time the float was depressed! The trouble was just the other way—too much gasoline. I asked Gray if he had changed the adjustment of the needle valve. He said he did not know, but he guessed he had, as he had done about everything else. I took a screwdriver and turned the needle valve down. It should have touched bottom in half a turn or less. It did not touch in a full turn, and I began to open my eyes. Fearing I might be turning in the wrong direction, I turned the needle back to its first position and marked it so I could return to the same position. Then I turned it again—one turn—two turns—and still no bottom. Three turns—still no bottom. 'Ye gods,' I thought, 'am I crazy?' Half a turn more, and it touched. I turned it back a scant half turn, cranked the engine a few minutes with the switch opened to expel the rich mixture, and it started and kept going. A slight adjustment, and the carbureter was O. K.

"The engine was running on the battery. I switched it over to magneto and the explosions stopped instantly. I looked at Gray. 'What have you been doing with the magneto?' I asked.

"I don't know," said Gray, "but the engine has been running on the battery for the past three days."

"Well, I myself cannot imagine what that fellow had been doing, but when I looked at the magneto contacts I found pieces of his brake band mixed up with the contact points. I picked them out and cleaned the points, and the engine ran on the magneto as if nothing had happened.

"Before leaving Gray I warned him to dump out every bit of oil from his crankcase and replenish with fresh oil, as there was no way of telling how far the oil in the crankcase had been thinned by the gasoline squirted in to prime the cylinders."



Exterior

Louisville Automobile Club



Secretary's Office



Assembly Room of Executive Com.

Eugene Straus
Pres.Howell Brown
V. Pres.W. Staniar
Treas.W. H. Argabrite
Sec.

LOUISVILLE, KY., Oct. 10—The history of the Louisville Automobile Club is a record of ups and downs; of hopes and disappointments; of shadowy enterprises dimly outlined; a ray of light; a step forward in the march of progress; increasing confidence; added powers; notable achievements—success.

With a handful of charter members, the club was formed at the Galt House on February 27, 1903. This was in the early days of the automobile. In fact scarcely a year before, the first car ever brought to Louisville had been unloaded from a river packet.

At that time the automobile was an uncertain quantity and its quality was hardly comparable with modern types. It was a question whether or not it could be perfected to the point of general utility, or whether it would remain a toy. But these men who gathered around the big table in the blue room at the Galt House nearly eight years ago saw the light and prepared the way. They realized that the motor car had come to stay and that the influence of the automobile was destined to grow.

The rapidity of the growth of the club is shown by the fact that at the first meeting there were fifteen motorists present. At the second meeting, two weeks later, there were twenty-four and the constitution and by-laws were adopted. The organization was formally launched under the direction of the following officers: Ira S. Barnett, president; Biscoe Hindman, vice-president; and G. Wilbur Hubley, secretary.

There were in the early days of the automobile in Louisville few successes and many disappointments. Everybody was against the motor car to about the same degree that every one is now in favor of it. There was one bill introduced into the Legislature which had for its purpose the complete destruction of the motor car so far as Kentucky was concerned. It required that a man be sent in advance of the automobile to herald its approach.

Following its organization, the club immediately got busy with the pleasure end of its usefulness and a run to Shelbyville was made on May 30 of that year. That was the first run and a forerunner of the present day reliability run. The forty-five entries made the trip without serious inconvenience.

On St. John's Day, in 1903, the first auto races ever run in Louisville were conducted at Fontaine Ferry Park. The meet was successful, but, of course, none of the exciting trimmings—such as accidents and the like—marked the occasion, because the "speed god" had not risen to his present state of power.

In the early part of 1904, the club approved an ordinance for the regulation of automobiles on the streets of the city, fixing a speed limit in the central section of eight miles an hour and of twelve miles in the less thickly populated districts. This

ordinance was passed by the General Council and is in effect today, but not frequently enforced.

Members of the club entertained the poor and sick of the city with an auto ride through the public parks of the city on July 4 of the same year. This was the origin of the annual orphans' day outing, which has been taken up by automobile clubs in practically every large city in the country.

About this time the question of a clubhouse was considered, but lack of funds made the project impracticable, and with much regret the matter was dropped. A few weeks later the organization adopted a club emblem, consisting of a wheel with an auto horn in the center. On the wheel was inscribed "Louisville Auto Club," but afterwards this design was changed so as to include the national emblem, including two wheels interlocked, with the name of the Louisville Club on the wheels.

The club in 1904 first turned its attention to keeping the streets free of glass and a stop was put to the nuisance. The organization also threw its weight against the Moral bill, then pending before Congress, which sought to tax motor cars \$50. A committee was then appointed to secure better streets, and its labors resulted in great improvement.

The first automobile parade was held during the Summer of 1905, and it is chronicled as a success. Every year saw remarkable improvement and on June 13, 1906, during the presidency of George H. Wilson, who served as such from 1904 to 1908, the club gave a floral parade. There were thirty-five cars bedecked with flowers and the affair reflected much credit on those who had charge of arrangements.

A run to Shelbyville enlivened the program of the club the same year. However, there had been a waning interest in club affairs, the membership having fallen from 91 to 75 and things were going badly.

On June 7, 1906, the Kentucky Automobile Club was formed at the instance of the local club, and in the following year the club aided in the defeat of the Thompson bill.

The bill was aimed for the practical extinction of the automobile, following the lines of the Traction bill, requiring that a man be sent ahead of the machine on the public roads.

Early in 1908, the following officers were elected: Pike Campbell, president; J. F. Ross, vice-president; Eugene Straus, secretary, and Walter Kohn, treasurer. "Toots," the official organ of the club, came into existence during the year and at the close of the fiscal year, April, 1909, the organization had a membership of 111.

During the last year the activities of the club were more pronounced than ever before, and just now the Louisville Auto-

mobile Club is in a state of prosperity never before thought possible. The organization arranged several good road meetings and a standing reward was posted for information leading to the arrest and conviction of any person stealing or tampering with a machine. Radiator emblems were adopted and any car carrying the insignia of the organization receives the protection of the club.

A successful race meet was held during the Shriners' convention, under the auspices of the club. The activities of the year wound up with the first annual reliability and economy contest. The tour covered about 250 miles through the fairest section of the State and was run October 8 and 9.

For six years the club paid no salaries and the work was done by the officers, but since the elevation of Eugene Straus to the presidency, the organization has had a paid secretary. The rooms of the club were recently moved from the Louisville Hotel to the Commercial building.

The usual orphans' day outing was held on June 4. When the Glidden tourists passed through Louisville the same month they were right royally entertained by members of the club. Recently a chauffeurs' register was arranged at the club for the benefit of the motorists. It contains the names of all professional chauffeurs in the city and information concerning them.

The membership of the organization is now 412 and before the close of the year it is the aim of W. H. Argabrite, secretary of the club, to increase the number to 500.

Taxicab Furnishes the Requisite Speed

It is not too much to expect that caddies, at least the most apt of them, ultimately become adepts at golf. In bold relief with this acquired skill is the lack of it as it is portrayed by the amateur. It is not uncommon to note that the caddie is the better at the game, nor would it cause surprise were one of the rascals to put it over some of the talent whose clubs they carry.

This rather natural situation leads to strained relations at times; the player of little experience feels that the caddie holds him in a certain contempt.

As the story goes (with which some liberty is being taken here) a swell young beginner, in a swaggering makeup, accompanied by a stunning girl, no less made up, was sporting a caddie of the sort that knew the game.

They played a while (in a manner to arouse the ire of the caddie) and, making but little progress, turned to the caddie and said: "Do you think we will be able to get around the course before dark?" "If you hire a taxicab, sir," said the youngster.

Coming Events

CALENDAR OF FUTURE HAPPENINGS IN THE AUTOMOBILE WORLD THAT WILL HELP THE READER KEEP HIS DATES STRAIGHT—SHOWS, RACES, HILL-CLIMBS, ETC.

- Oct. 18.....New York City, Madison Square Garden, Electric Car Day at the Electric Show.
- Dec. 1.....Chicago, Ill., First Annual Aeronautical Exhibition in the Coliseum.
- Dec. 31-Jan. 7, '11.....New York City, Grand Central Palace, Eleventh Annual International Automobile Show.
- Jan. 7-14, 1911.....New York City, Madison Square Garden, Eleventh Annual Show, Pleasure Car Division, Association of Licensed Manufacturers.
- Jan. 15-21, 1911.....Detroit, Wayne Gardens, Detroit Automobile Dealers' Association.
- Jan. 16-21, 1911.....New York City, Madison Square Garden, Eleventh Annual Show, Commercial Division, A. L. A. M.
- Jan. 28-Feb. 4, '11.....Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Pleasure Cars and Accessories, Exclusively.
- Feb. 6-Feb. 11, '11.....Chicago Coliseum, Tenth National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Commercial Vehicles, Pleasure Cars, Motorcycles and Accessories.
- Mch. 4-11, 1911.....Boston, Mechanics' Building, Ninth Annual Show, Licensed Automobile Dealers' Association.

Races, Hill-Climbs, Etc.

- Oct. 21-22.....Commercial Vehicle Test of Boston "American."
- Oct. 21-25.....Washington-Richmond Reliability Run of Washington "Post."
- Oct. 22-30.....Belmont Park, New York, International Aviation Tournament and Show of Licensed Automobile Dealers of New York City.
- Oct. 27-29.....Dallas, Tex., Track Meet.
- Oct. 28-29.....New York City, New York "American's" Motor Truck Contest.
- Oct.....Exhibition Auto vs. Aeroplane, Dutchess County Fair, Poughkeepsie, N. Y.
- Nov. 3-5.....Atlanta, Ga., Speedway Meet, Atlanta A. A.
- Nov. 5-6.....New Orleans, La., Track Meet.
- Nov. 5-7.....Los Angeles-Phoenix Road Race, Maricopa Automobile Club.
- Nov. 7-11.....Five-day Reliability Run of Chicago Motor Club, 200 Miles a Day.
- Nov. 10-12-13.....San Antonio, Tex., Track Meet.
- Nov. 11-12.....Savannah, Ga., Road Race, Savannah Automobile Club, and Grand Prix, Automobile Club of America.
- Nov. 24.....Santa Monica Road Race, Los Angeles, Cal.



Vol. XXIII

Thursday, October 20, 1910

No. 16

THE CLASS JOURNAL COMPANY

H. M. SWETLAND, President

A. B. SWETLAND, General Manager

231-241 West 39th Street, New York City

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W. F. BRADLEY, Foreign Representative

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 and the Automobile Magazine (monthly), July, 1907.

SOME confusion seems to have been brought about by the rather good performance of the long-stroke, single-cylinder motors as they are now being designed abroad. These motors perform extremely well and they are economical of fuel, which is the important point in France in particular, and in Germany to some extent.

* * *

IT is not believed that the long-stroke, single-cylinder motor is much in demand in this country; the question of fuel economy is not as yet a serious factor here, nor is there any likelihood of a fuel shortage for some time to come. The American automobilist, take him as a general proposition, abhors a "one-lunger."

* * *

THERE is a certain demand for relatively low-priced, single-cylinder automobiles, and this need is being adequately cared for by builders who appreciate the fact that the American automobilist who selects a one-cylinder car wants it for a more or less utility purpose, nor would he thank any maker or person for information which would permit him to speed the car up beyond its normal capability.

* * *

THE fact that the long-stroke, single-cylinder cars, as they are made in France and Germany, are so designed that they will travel at a high speed and accomplish other road stunts puts them beyond the pale of

use under the conditions as they have to be met in America.

* * *

THERE is one other foreign situation that is being commented upon, involving the use of wire wheels, and it is not uncommon to hear automobilists say that the wire wheel is likely to come to America and be a factor in automobile work. The probabilities are that the wire wheel, as it obtains in England, will gain favor in America when the hickory forests of Missouri are depleted, and not before.

* * *

PROPERLY made wood wheels are so eminently satisfactory that they have been used in vehicles from 4000 B. C. down to the present time, and the only countries that do not prefer them are those which are without a native supply of hickory. This wire-wheel question is in the same category as the single-cylinder, long-stroke motor. Local economic situations favor the special line of products that will best accomplish the purposes, compensating for a famine of material of the right kind in the respective cases. In France they are short of gasoline, and in England hickory is scarce.

* * *

COMFORT and convenience are ruling considerations in body work at the present time, and in a new design as presented in THE AUTOMOBILE this week the convenience of the owner is consulted.

* * *

THIS particular body is of the enclosed type with inside control, and if the owner elects to drive, the seating capacity from his point of view is for three persons, but if a chauffeur is employed the seating capacity is then limited to the occupants of the commodious rear seat. The space alongside of the driver's seat is reserved for the entrance, making the same unusually inviting, the idea being to afford the absolute limit of comfort and agreeableness of the surroundings in town car work.

* * *

THERE seems to be an unusual degree of complication in connection with the A. A. A. sanction, which was finally given for the Bay State racing event involving the presence of outlawed drivers. Whether or not the reviewing committee will be able to get at the bottom facts remains to be seen; in the meantime, it looks like a blow at clean sport, coming rather too soon behind the late Brighton Beach affair, which, from the point of view of the spectators who paid the bill, reflected discredit upon the sanction, and should have discouraged "rubber stamp" methods of issuing sanctions. If it can be shown that unruly outlaws are out of control for the moment, nothing remains but to suppress them; but if it is a clean case of "the means for the end" there is work for an honest investigating committee to do.

* * *

PERHAPS there is nothing of such vital importance to the owner of an automobile as the condition that will induce longevity in the tires, and in an article that appears elsewhere in the paper this week this problem is handled fittingly; instead of taking up space in complaining about the deterioration in tire quality, the entire article is devoted to a clear and lucid statement of the facts as they confront the man who must pay the bill.

News of the Shows

PLANNING FOR THE IMPORTERS' DISPLAY—EXHIBITION OF CARS AT AVIATION TOURNAMENT—ELECTRIC SHOW CLOSES—DECORATIVE FEATURES AT THE GARDEN

THE importers of foreign automobiles have planned the most comprehensive show of their wares that has ever been held on this side of the ocean. The show will be held in the ballroom of the Hotel Astor from January 2 to 7, 1911.

Nine concerns have signed up for space to date and similar action on the part of six other companies is looked for in the immediate future. Space allotments will be made October 24.

Arrangements for the show are in the hands of the following committee: Paul La Croix, chairman, and Messrs. Demorest and Lascaris.

The big ballroom of the Astor will be divided into fifteen spaces for exhibition purposes, if a full representation is secured. The following cars have signed up: Darracq, S. P. O., Renault, De Dion, Itala, English Daimler, Benz, Panhard and C. G. V. Like action is expected of the following: Hotchkiss, Fiat, De Dietrich, Mercedes, Isotta and Züst.

In the list are eight French cars, four Italian, two German and one British automobile.

Classic Fountain at Garden Show

One of the strikingly attractive features of the coming Eleventh National Automobile Show, which is to be conducted at Madison Square Garden from January 7 to 21 by the A. L. A. M., will be the pergola fountain, in the shape of an arc at the entrance to the amphitheater.

The fountain is in the form of a low abutment of gray stone, in the front of which is carved a long settee. It will have a trough-like basin and at each end water will spray from the mouths of griffins and gargoyles. The falling water will be electrically radiant, made so by iridescent and cunningly hidden lights. Artificial water plants from which will radiate varicolored lights will be in the pool and natural water lilies and gold fish will be mingled with them.

The fountain is overhung with wistaria, which clings to a netting of lattice work and gracefully entwines itself about the eight marble-white Doric columns which support the pergola. Four bay trees adorn the front of the fountain.

Auto Show at Aviation Tournament

With a prize list totaling \$72,300 and including \$10,000 for the swiftest flight from the starting line at Belmont Park, around the Statue of Liberty and return, six other prizes averaging \$5,000 each and a dozen others ranging from \$1,000 to \$4,000, the first International Aviation Tournament to be held in the United States will open Saturday and continue for nine days.

Many world-famous aviators with their machines will take part in the various events carded.

In connection with the tournament there will be an exhibition of automobiles and accessories. This part of the show will be held in the betting ring, which affords ample space for such an undertaking.

Among the cars that will be shown are the following. Cadillac, Peerless, Mitchell, Chalmers, Stevens-Duryea and Cole "30." The list of accessory makers includes the following: Livingston radiator; Henry Ducas, motors;

Simms magneto; Peter A. Frazee and Company; Bosch Magneto Company; Hartford Rubber Tire Works; Marburg Brothers; Mea magneto; Bliven & Carrington, greases; John A. Roebling Sons & Company, wire and tubes; Metz Aeroplane Company; Aerial Navigation Company, propellers; American Propeller Company, propellers.

Electrical Show Ends in Blaze of Glory

Literally in a blaze of glory the Fourth Annual New York Electrical Show came to a finish at Madison Square Garden Thursday evening. The great hall was packed at almost every session. Among the exhibitors were: The Anderson Carriage Company, Detroit Electrics; Babcock Electric Carriage Company; S. R. Bailey & Company; the Baker Motor-Vehicle Company; General Vehicle Company; the Lansden Company; Studebaker Brothers' Company, of New York; Edison Storage Battery Company; Electric Storage Battery Company; Gould Storage Battery Company; the New York Edison Company; Philadelphia Storage Battery Company; United States Light & Heating Company and the Westinghouse Electric & Manufacturing Company.

On Tuesday the First Annual Convention of the Electric Vehicle Association of America, a conference between the vehicle men and those identified with the installation and operation of central charging stations, was held in connection with the show. W. H. Blood, Jr., president of the association, presided.

Other addresses were by the president, W. P. Kennedy, L. A. Ferguson, S. C. Harris, Day Baker, F. M. Tait, J. T. Hutchins, G. M. Graham, Duncan Curry, Bruce Ford and Charles L. Eidlitz.

Oldfield, His Car and Partners Barred

Barney Oldfield, who was suspended by the Contest Board recently for advertising his participation in an unsanctioned automobile race meet, was formally disqualified by that board, Wednesday, in special session. This action was taken as the result of the race meeting at the Readville track last Friday, when he pushed his way through the officials and made two circuits of the track.

His car, a Benz, is also officially banned and barred indefinitely, and William H. Pickens and J. Alex. Sloane, manager and advance man for Oldfield, are disqualified from participation in any sanctioned meet either as owner, entrant, driver, manager or in any other capacity.



Design of fountain that will be a decorative feature of the A. L. A. M. show

The Week in Detroit

NEWS NOTES FROM MICHIGAN'S MOTORING CAPITAL—OWEN COMPANY TO TRANSFER ITS ACTIVITIES TO LANSING—CANADIAN COMMERCIAL COMPANY ORGANIZED

DETROIT, Oct. 17—The Owen Motor Car Co., of Detroit, has been absorbed by the Reo Motor Car Co., of Lansing, and it is announced that the high-class cars build in Detroit by the company since its formation a year or more ago will hereafter be turned out in Lansing. R. E. Olds states that the Owen company will be greatly strengthened financially, and that the output will be materially increased. From the outset the Owen Motor Car Co., invading the high-priced field, had been successful, and the Detroit plant had been run to capacity turning out cars.

The past week witnessed the organization of the first Canadian commercial motor car company. All the parties interested in the new enterprise, with one or two exceptions, are business men of Windsor, just across the river from this city. The company will be known as the Canadian Commercial Motor Car Co., and will manufacture the "Canadian Car," with a capacity of 1,800 pounds. The capital stock is \$40,000. Celestine Thibault is the principal backer and president of the concern. The other officers are: Vice-president, J. G. Gagnier; secretary-treasurer, Charles R. Tuson; general manager, Charles F. Howse. Ernest D. Craig will be sales and advertising manager.

News comes from Hamilton, Ont., that a deal has been practically closed there for the merger of the Baynes Carriage Co., of that city; the American Road Machine Co., of Canada, located at Goderich, and two Detroit motor car companies under the name of the Acme Motor Carriage & Machinery Co., with a capital of \$1,000,000.

Some 70 sales managers of the General Motors Co. met in Flint last Wednesday and Thursday to discuss plans for the selling campaign of 1911.

The Day Automobile Co. has been organized in Detroit, with a capital stock of \$300,000, of which \$200,000 is paid in, and will engage in the manufacture of the Day utility car, an automobile designed especially for the use of farmers, and which has a convertible body that makes it either a pleasure or commercial car. The present plans call for an output of 1,000 cars in 1911. Officers of the company are: President, Thomas W. Day; vice-president, Hugh Jennings; secretary, Cameron F. Roberts; treasurer, Wallace E. Brown.

How United States Motor Co. Will Share Profits

Benjamin Briscoe, president of the United States Motor Company, has announced the details of the co-operative plan by which the employees of the company are to be given an opportunity to share in the ownership of the company. The company offers its 7 per cent. cumulative preferred stock at the market price to be determined August 1, 1911. These shares are to be paid for in installments within two years. An amount of common stock equal to 1-4 of the preferred shares disposed of to employees will be trustee and the dividends set off to the holders of the preferred shares and applied to the purchase. In cases of default through dismissal or resignation pending full payment for the shares, the forfeited dividends or annual bonuses will be placed in a fund to be known as the "Employees' Honor Fund," which will be divided *pro rata* among the employees whose showing during the year is satisfactory to the company. Subscription to the issue is limited arbitrarily to a scale based upon the pay of the various employees.

For the purpose of establishing an English motor car company, which will be affiliated with the United States Motor Company, Mr. Briscoe has sailed for Europe. He was accompanied by Mrs. Briscoe and will be in Europe five weeks.

It is likely that the English concern will be known as the United Kingdom Motor Company and will be located near London.

It is the intention of the United States Motor Company to transfer its designs and duplicate tools to England, but to purchase its machinery in that country.

The efforts of the United Kingdom Motor Company will at first be devoted to the United Kingdom, Germany, Russia. After branch houses have been established in these territories it is likely that the products of the organization will later be sent to all important European countries.

Automobile Activities in Pittsburg

PITTSBURG, PA., Oct. 17—The Automobile Dealers' Association of Pittsburg has named the following committee to arrange for the 1911 show at Duquesne Garden: Robert P. McCurdy, chairman; A. X. Phelan and F. D. Saupp. W. N. Murray, president of the Association, will be the ex-officio member.

The W. W. Bennett Motor Car Co. has been admitted to membership in the Automobile Dealers' Association of Pittsburg. It represents the following cars: Jackson, Buick, Waverly Electric, Franklin, Peerless, Belden, Woods Electric, Stoddard-Dayton, Overland, Maxwell, Cadillac, Pierce, B. & L. Electric, Marion, Hudson, Locomobile, Lozier, Packard, Pope-Hartford, Stevens-Duryea, White steam and gasoline, Elmore and Winton.

Big Jersey Home for Hudson and Peerless

NEWARK, N. J., Oct. 17—Work toward the construction of what will be the largest structure in this State devoted to automobiling interests has been started at 37-39 William street, this city. The building will be occupied by A. Elliott Ranney & Co., New York and New Jersey agents for the Hudson line, and the Peerless Motor Car Co., of New York. They will occupy the structure jointly. Both firms are at present located nearby.

Another Suit Filed by the A.L.A.M.

Announcement has been made that suit for infringement of the Selden patent had been filed against the W. A. Wood Automobile Manufacturing Company, of Kingston, N. Y., which is in the southern district of New York.

The bill of complaint states that the Wood company is manufacturing gasoline cars that infringe the patent.

Dexter Heads the Grout Company

At the annual meeting of the Grout Automobile Company, Orange, Mass., last week the following officers were elected: President and secretary, G. E. Dexter; treasurer, E. S. Hall; directors, E. S. Hall, G. E. Dexter, H. F. Misener; general manager, E. S. Hall; selling agent, Reginald Wade; superintendent of factory, H. F. Misener.

Cameron to Visit Olympia Show, London

W. H. Cameron, chief engineer of the Willys-Overland Automobile Company, sailed for Europe yesterday on the "Lusitania." Mr. Cameron will visit the Olympia show in London and will inspect the automobile situation generally on the continent. Mrs. Cameron accompanies him.

Aerial Events

BY MARIUS C. KRARUP. A CURRENT RECORD OF ESSENTIALS IN THE PERFORMANCES OF AVIATORS AND AERONAUTS. A WEEK FULL OF MOMENTOUS DOINGS

THE second stage of ballooning and the first stage of aviation are rapidly drawing to a finish. Almost every hour is historic. These days witness practical trials which must go far to settle convictions as to the actual state of progress in air craft. All theories withdraw to the background and await results, no less sure of themselves perhaps but less confident of a hearing. Last Saturday morning the motor balloon "America" was released from its shelter at Atlantic City, after many delays and popular disappointments, and Walter Wellman with Melvin Vaniman, his engineer, and four helpers finally set their course for somewhere in or at the Atlantic Ocean, preferably Europe. They landed 400 miles south of the starting point and 100 miles off Cape Hatteras. The event did little save to make the performance a notable event in financiering, sport and newspaper enterprise, sufficiently remarkable to excite wonderment and even enthusiasm from the standpoint of all who love modern adventure, and sufficiently complicated scientifically and mechanically to confuse conclusions and bolster new and treacherous hopes for the future of the elongated gas bag, nine-tenths drifting, one-tenth driven. Only 24 hours later, while the coast of Nantucket was busily conversing with the Marconi apparatus of the "America" somewhere in the offing, the Clément-Bayard motor balloon was started from Compiègne, northeast of Paris—it was 7.15 Sunday morning—and headed for London. A favorable wind sped the apparatus at the rate of 40 miles per hour in almost the right direction. The motors had easy work, and six hours later the daring deed was done and the pilot, Mr. Clément, Jr., deposited his crew of five and his delighted passenger, Arthur Du Cros, of the well-known British family identified with the history of automobile tires, among the gasping denizens of the largest city in the world. Almost at the same time—reckoning with the long minutes of history—and more precisely beginning Saturday, Oct. 22, some thirty noted aviators will demonstrate their art at Belmont Park on Long Island, and the interested public, comprising the entire civilized world, holds its breath in expectation. What new stunts will be done in this new loop-the-loop game in which the daring entertainers know not in advance when or where or how the loop comes? Who shall win the tempting prizes, aggregating at the present moment \$72,000 and likely to be swelled further through the persuasive force of things doing? And—passing thought—whose shall be the names to be stricken with sad nonchalance from the roster of active conquerors of the atmosphere, that heroic list which keeps so remarkably constant in length of late, losing by cautious desertions, by disablement and by the final cross almost as many devotees as it gains from a sportsmanlike craving for new sensations or from lust for glory and its emoluments?

And from abroad comes the report that Henry Wynmaelen with the latest model of Henry Farman biplane, after a few days ago making a new altitude record of 9,185 feet with the same machine, succeeded in capturing a \$35,000 prize by flying with a passenger from Paris to Brussels and return, a total by the air route of about 350 miles. Wynmaelen covered 234 miles on the first day and the rest on the second, Oct. 16. Legagneux, also with a Farman biplane, tried the same feat, but suffered a slight accident when descending 116 miles from the finish. Wynmaelen's time was 27 hours 50 minutes and 27 seconds, more than 12 hours being used for rest and care of the motor.

At St. Louis, Mo., ten spherical balloons set out for a longer international prize race on Oct. 17.

The Wellman expedition, at the present moment, bids for comment rather than description.

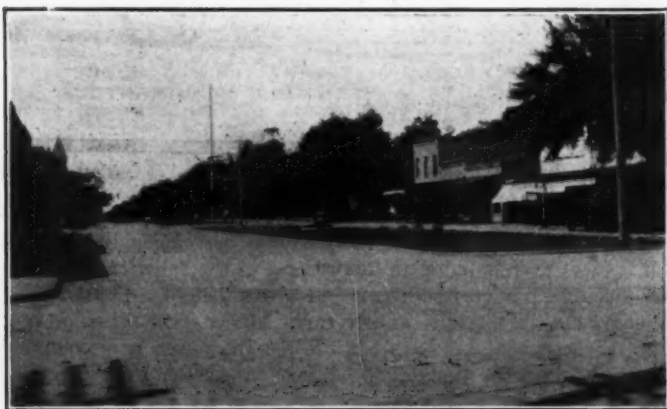
The motor balloon can reach greater heights than the aeroplane, perhaps, and its motor troubles may be remedied en route. But it owes its reputation in this respect to the spherical balloon. No dirigible has carried power to great height. Constructed in enormous dimensions it can carry higher propulsive power than the aeroplane, but each additional horsepower is discounted in advance by the additional volume and areas to be forced against the air currents. It can stay in the air a long time, but not necessarily where wanted. All confidence in its possibilities should be measured in comparison with those of the aeroplane. As a destroyer in war and a maker of peace—and it is as a peace-maker that Wellman proposes to demonstrate its superiority, he says—its capacity for controlled operation at high altitudes is indispensable, and it seems unfortunate that the attachment of the so-called equilibrator to the "America," for the avowed purpose of holding the airship down to within 200 feet from the surface of the sea, has been considered necessary, since the employment of this device renders the whole demonstration null and void for its declared purposes.

Undertaken gaily and carried out with the dash which, for example, Moissant put into his flight from Paris to London, the crossing of the Atlantic in a dirigible would have been glorious sport, worth its price and its reward, in case of success, but as the last squeeze in a frantic search for conspicuous achievement and coupled with the profession of lofty purposes on one side and keen pecuniary arrangements on the other, it challenges a close examination of the pretensions with which it is heralded. Unfit to travel over land, as the preparations proved it to be; unfit to cross the ocean unless the winds favor it exceptionally, as proved by its coastwise course; unfit to reach the altitudes where lies the only perceivable utility of the motor balloon in competition with aeroplanes, the "America" outfit—so skillfully named to enlist a favorable sentiment—offers apparently no guarantee that anything which may be accomplished with it once may be accomplished again when wanted, or within a month after it is wanted, or that anything which can be done with it at any time will serve any useful purpose.

As between the aeroplane promised by Lilienthal, Chanute and others, which stays in the atmosphere for days by virtue of large areas, small weight and perfected devices for utilizing air currents for its support, and the motor balloon rendered capable of similar service though at much lower speed by enormous size and scientific equipment, the choice, with regard to the probability of seeing either of these creations of hope and imagination materialized, seems to favor the former among those who reason for engineering purposes rather than for publicity.

How to Make a New Altitude Record.

Start from Leadville. This city has a recorded altitude of about 11,000 feet. The country is fairly level for several miles both southerly in the direction of Malta and westerly toward Tennessee Pass on the "great divide." A recorded rise from the ground would be a world record. The gradual rise of the ground from the Missouri River to this plateau of the Rockies gives opportunities for trying out the carbureter adjustment required for best results; also for trying out the proportions between aeroplane area and motor power and the most favorable relation between speed and angle of incidence, and the angle of incidence or tilt which gives the best fore-and-aft balance of the machine, and therefore the smallest loss of efficiency from the use of an elevating rudder must also, other things equal, give the highest altitude.



At Quitman, Ga., on "Round-the-State" Run

Preparing for Grand Prize and Smaller Events

SAVANNAH, GA., Oct. 17—Entry blanks for the Grand Prize race and its auxiliary light-car races have been issued by the Savannah Automobile Club. Save for the substitution of the names of Harvey Granger, Frank C. Batty, Arthur W. Solomon and William B. Stillwell for those of the officials of the Motor Cups Holding Company, and of Savannah for the Motor Parkway, the blanks for the Grand Prize entrants are identical with those that had been prepared for the original Long Island contest.

Entries close November 5 and so far the indications are that the list will be considerably larger than had been expected. No limits are placed on the power and construction of the cars save that they are limited in width to 68.89 inches; must have their exhausts directed away from the ground; must have a motor-driven reverse gear and must be certified as safe by the Technical Committee of the Automobile Club of America.

The course as approved by the club is 18.50 miles long and the Grand Prize racers will circle it 22 times, making the total about 407 miles. The race will be held November 12.

On the preceding day two road races for light cars will be given. The route will be the same as that to be taken by the big racers, but the number of circuits will be cut down to 15 in one case and 10 in the other.

The cars eligible to entry in these classes correspond in a general way to Divisions 2 and 3 of Class B, according to the rules of the Contest Board, but there are a number of exceptions and options not included in the terms of the "stripped stock chassis" class.

The longer race scheduled for November 11 is for the Savannah Challenge Trophy, a cash prize of \$1,000 and various minor awards. The cars eligible must have piston displacements ranging between 231 and 300 cubic inches, and conform with the requirements of the Automobile Club of America's rules. The distance for this race is approximately 277.5 miles.

The Tiedeman Trophy race is for cars of from 161 to 230 cubic inches displacement and the mileage of the course is 185. The entrance fee in either of these contests is \$250 a car; two for \$400 or three for \$500.

Considerable work has been done to put the course in proper condition for racing and 100 loads of gravel have been used in repairing bad spots. The contract for oiling the entire 18.5 miles of the course has been let and this phase of the work will commence immediately.

The stands this year will be located on either side of the course, the grandstand on the outer side at Fifty-second street and Waters road and the press and official stand on the inside, connected by an elevated passage-way over the track. South of the main stands, the general admission stand will be built on the inside of the course. Each of the stands for the public will be 1,000 feet long and it is estimated that they will hold 40,000 persons.

"Round-the-State" Tour

ATLANTA, GA., Oct. 18—Unique in its conditions is the "Round-the-State" automobile run of nine days that started Monday morning. There were about 75 starters but the cars were not required to begin at a definite line, and the noon and night controls have been divided up so that it will be possible to entertain the big caravan.

In a general way the run is following this course: Atlanta to Macon; to Albany; to Bainbridge; to Valdosta; to Waycross; to Savannah; to Augusta; to Athens, and back to Atlanta. Sunday will be spent in Savannah. Road conditions during the first three days were excellent. The entered cars include: Two Halladays, one Ohio, three Maxwells, three Columbias, eight Buicks, two Primos, one McFarlan 6, two Thomas Flyers, one Lozier, one Franklin, three Knoxes, two Nationals, four Whites, two Coles, four Overlands, one Speedwell, two Carter-cars, one Selden, one Hudson, one Everitt, two Chalmers, two Ramblers, three Haynes, five E-M-F's, one Abbott-Detroit, one Firestone, two Mitchells, one Olds Special, one Brush, one Pullman, two Hupmobiles, one Case, Oakland and Velie.

Mount Vernon Club to Stage Races

The second automobile race meet under the auspices of the Mount Vernon Automobile Club will be held Saturday afternoon, October 22, at the Empire City motor speedway. Seven events are carded and entries for each are said to have been received in satisfactory volume. The races include two 10-mile events under Class B; one 10-mile event under Class C; a 5-mile free-for-all handicap; an owners' race at 5 miles, limited to members of the Mount Vernon Automobile Club, to be driven by the owners; a club handicap at 10 miles and an hour race, limited to cars with piston displacements of from 231 to 300 cubic inches. This race, which will be the feature event, will bring to the winner the possession of the Splitdorf trophy.

Otto F. Rost, who successfully managed the former meeting of the club, is general manager of this meeting and is chairman of the contest committee.

The affair is fully sanctioned and recognized.

Big Entry List in American Truck Test

The commercial vehicle endurance and economy test scheduled for October 28-29 on the streets of New York City, under the auspices of the New York *American*, has attracted an unusually large and representative field. A. H. Whiting is to be referee;



Savannah, Ga., on "Round-the-State" Run

SEVENTY-FIVE STARTERS IN THE NINE-DAY RUN THAT LEFT THE GEORGIA METROPOLIS LAST MONDAY

E. L. Ferguson, manager, and the chairman of the Technical Committee is A. L. McMurtry.

Electrics entered in the contest shall be known as Class A, while the gasoline trucks are Class B. There are five divisions under each class, according to capacity. A running schedule of 5 1-2 hours for each day has been arranged for the group designated as the Distributing Group, which will travel with half loads and will stop frequently as if in service as distributors, while the Transfer Group will cover 65 miles a day.

Illinois to Have Good Roads Association

SPRINGFIELD, ILL., Oct. 17—An important step in the matter of good roads in the State of Illinois has just been taken by the organization of a State-wide association at Bloomington, which will have for its avowed purpose the up-building, repairing and general care of every road in the State. The association will be known as the State Association of Township Highway Commissioners and Town Clerks of Illinois. Officers elected were as follows: President, George W. Haywood, Joliet; vice-president, Clayton Mays, Normal; secretary-treasurer, W. D. Hall, Joliet; members of executive board, B. H. Myers, Naperville, John Schloesser, Bloomington, F. H. Hannifield, Tremont, A. P. Ferguson, Griggsville, Thomas Lyman, Champaign, B. G. Gehrig, Centralia.

Santa Monica Race an Open Event

LOS ANGELES, Oct. 17—Entry blanks are out for the second annual Santa Monica Road Race which will be run Thanksgiving Day. Manager Dick Ferris has made the big car race an open event, and many entries are expected.

Ten thousand dollars in cash prizes have been guaranteed for these races in addition to the \$1,000 Dick Ferris trophy and the \$500, Leon Shettler cup. The entire list in each event is limited to sixteen, and the course is eight and two-tenths miles.

Five Miles of Cars in Cleveland Parade

CLEVELAND, Oct. 17—One of the features of the Cuyahoga County Centennial at Cleveland was an automobile parade on Tuesday, Oct. 11, to celebrate the opening of the new Rocky River Bridge, which is the largest concrete span in the world. There were about 1,500 cars in line, making a parade five miles long and which took two hours to pass a given point.



Bull Street, Savannah, on "Round-the-State" Run



Out of Valdosta, Ga., on "Round-the-State" Run

Savannah Races Stir Automobile Row

Scarcely a manufacturer represented along Automobile Row will admit that his car will not be entered in one or more of the contests to be staged at Savannah next month. The Coles and Falcars, winners in the light car races over the Vanderbilt Cup course this year, will try again, according to their makers. The victorious Pullman in its class at the Fairmount race will try to duplicate its excellent performance. A pair of Maxwell cars are promised as entrants in one of the smaller classes, and two Stoddard-Daytons are being prepared for the Grand Prize. The Benz and Fiat trios have been nominated for the big race, and so has the speedy Lozier. There is a possibility of a Correja, a Midland, and an Amplex. Three Abbott-Detroits are said to be ready for the Tiedeman Trophy race. The Marquette-Buick pair are being prepared for the Grand Prize. Two Marmons have been named for the big race and another for the Savannah Challenge Trophy. Three Nationals may try conclusions.

At Hudson headquarters it was said that a car was being made ready for racing and if its performance in preliminary work met with expectations it would be entered in one of the races. The Ford company declared that it would be represented. As a matter of fact only two definite statements were made among the handlers of automobiles on the row that their cars would not compete.

The additional foreign entries which have been mentioned have not yet been definitely made. Representatives of the Savannah Automobile Club will be present at and before the coming race meeting at Atlanta and will make an effort to swell the entry list from among the contestants at the Speedway meeting.

All indications point to record-breaking fields in all three events, the entry list already giving indications of surpassing in size the most sanguine expectations of the promoters, and including many of the fastest cars in the country.

Ford Wins Bloomington Reliability

SPRINGFIELD, ILL., Oct. 17—T. A. Harper, driving a model T Ford, was awarded the cup for winner of first place in the reliability run of the Bloomington, Ill., Automobile Club, after two other drivers, J. L. Murray, Buick, and Velde, his partner, had withdrawn. The two other machines which had finished with perfect road scores, Orlo Price's Warren-Detroit, and Harry Arnold's Rambler, were penalized at the meeting of the contest committee, which ascertained that these drivers had failed to observe a rule which called for all machines to come to a stop at all railroad crossings.

This left Murray and Velde at the top of the list alone. Harper stood second. Because of the fact that this firm had been instrumental in promoting the affair, they withdrew their cars from the list of winners, and the first prize, a handsome silver loving cup, went to Harper.

SAN FRANCISCO, Oct. 13—The Pacific Coast has had its first real endurance run, and motordom in this region is discussing the result of the contest and reviewing the work of the different entrants. The run was held under the auspices of the San Francisco Motor Club and covered a 470-mile course from San Francisco to Lake Tahoe and return. There were eleven entrants in the tour, nine of which checked in the finishing control with perfect scores. The tenth was penalized for failing to reach the fifth control on the homeward journey within the allotted time. The eleventh car met with a mishap on the last leg of the journey and was forced to retire from the contest, although up to the time it had crashed into a fence and broken a front axle it had held a perfect score.

The cars returning with perfect scores and the drivers were: Buick, Fred Gross; Buick, Frank Murray; Cartercar, E. C. Collins; Crawford, E. Stewart; Ford, E. L. Cutting; Knox, Bert Oaks; Maxwell, C. S. Harding; Rambler, Captain McCauley; Winton, H. L. Owesney.

The two cars failing to win perfect scores were the White steamer which was penalized for failing to reach one control on time, and the White gas car which slipped from the road into a ditch and broke the front axle.

The route was a well-selected one to test the reliability of the cars. Every conceivable sort of a road condition was encountered on some part of the trip. During the first portion of the trip fine boulevards were enjoyed; later dusty valley roads were experienced, then came stretches of rough foothill highways and later came the steep and heavy mountain roads with sharp curves that overlooked deep ravines. On the homeward trip rain fell and another road condition was encountered. The dusty sections of the road were converted into veritable seas of mud, and as most of the cars had not been equipped with chains the drivers had much trouble in keeping to the roads.

The run started on Saturday morning at 7 o'clock, the cars being ferried to Oakland where the actual start began about 8 o'clock. Checked out at two-minute intervals the cars were given four hours and a half to make the city of Stockton, the first control, 84 miles from the start. The time allowance

First Successful Coast Run

proved a generous one as the roads were good and all the cars were forced to loaf along toward the end of the journey so as not to check in ahead of time. After an hour's delay, during which time the tourists partook of lunch, the cars were again started. The second leg of the tour required the motor cars to make Sacramento, 52 miles away in 2 hours and 15 minutes. This schedule, while it was made by all the cars, required some stiff



Winton crossing a bridge near the source of the Truckee river

work as the roads in some places were in poor shape, undergoing repairs, and occasioned delays. A short rest of fifteen minutes was allowed at the Capital City and the cars were again set on their course to Auburn, 36 miles away. This route laid through the foothill region and the roads were in bad shape. Two hours were given to complete the distance, and again all the cars came into the control in the required time, but there was no loafing en route. At Auburn the cars were garaged for the night.

The second day's touring opened with the beginning of the real mountain portion of the journey, in which the cars were forced to ascend some seven thousand feet to drop some three thousand on the other side of the highest point to reach Truckee. The distance over the mountains was 68 miles and the cars were given six hours and thirty minutes to complete the distance. The same story regarding the ability of the entrants to negotiate the distance was noted here as at the other controls, all the cars reaching the goal in required time. The cars were checked out one hour later for Lake Tahoe, 16 miles off through the mountains. One hour and a half was given to make the distance, but this time was again too generous, and the cars made it within fifty minutes and had to remain outside the control until checking-in time.



Rambler car on way to Summit, showing a well-made road and scenery that is magnificent

ENDURANCE CONTEST OF SAN FRANCISCO MOTOR CLUB COVERS A 470-MILE COURSE OVER MOUNTAIN AND PLAIN

Sunday night was spent by the tourists at the Tavern on the lake. Some of the drivers took their cars off for small side trips on the lake shore and added to the mileage covered by their cars.

The home journey began Monday and took in the run from Lake Tahoe to Sacramento, a distance of 122 miles. The cars were given 13 hours to make the control and all, with the ex-



Inter-State under scenic conditions in the Sierras that commands admiration.

ception of the White steamer, which broke a brake shoe, reached the control successfully. The steamer, after making repairs, met with various other delays in the shape of being stalled by a mountain train that held the road for the good part of an hour until a section was reached which permitted the motor car passing. Then again a freight train prevented it from crossing through the snow shed for some thirty minutes. A rain and thunderstorm in the mountains which made the going dangerous reduced the running time, and later, in the darkness, losing the road increased the lost time to three or four hours until it reached the control.

The last portion of the trip began Tuesday morning and embraced 136 miles from Sacramento to San Francisco through the San Joaquin and Livermore valleys, Dublin canyon, Hayward, Oakland, and by boat to Frisco. On its way to Livermore valley the White gasoline car slid from the road and crashed into a fence and was forced to remain out of the race. The other cars completed the journey in time to keep their winning scores, although the heavy rain that was falling caused the drivers much difficulty in getting over some of the grades.

All the contestants are enthusiastic over the tour and an effort is now under way to make it a yearly event. Scenically the course is without a peer in any section

of the United States, and as far as the testing of the endurance powers of the cars is concerned it is without doubt equal to the best in the country.

Hilles Heads Delaware Association

WILMINGTON, DEL., Oct. 15—The Delaware Automobile Association held its annual meeting here this week and elected the following officers: President, T. Allen Hilles, of Wilmington; first vice-president, Joseph Bancroft, of Wilmington; second vice-president, Wilson L. Cavender, of Smyrna; third vice-president, Joseph L. Cahall, of Georgetown; secretary, Charles G. Guyer, of Wilmington; treasurer, William Stanier, of Wilmington; executive committee, in addition to the above officers, John B. Martin, John B. Bird and Charles C. Kurtz, all of Wilmington.

Baltimore Club Elects Officers

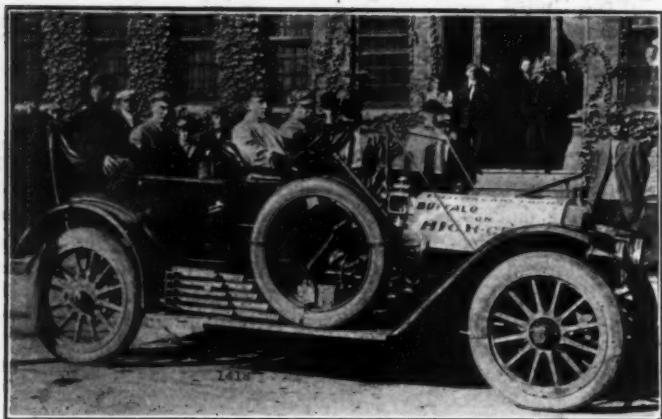
BALTIMORE, MD., Oct. 16—The Automobile Club elected the following officers at the annual meeting: Dr. H. M. Rowe, president; Joel G. Nassauer, vice-president; H. M. Luzius, secretary; Thomas G. Young, treasurer; board of governors, John S. Bridges, C. Howard Millikin, James S. Reese, William A. Dickey, Joseph M. Zamoiski and Ernest J. Knabe. The club has adopted a progressive policy for the winter, pledging itself to increase the membership to 800, post road signs within 10 miles radius of the city hall, abolish bad street car and other crossings in the city and to establish with the Appeal Tax Court a uniform rate of taxation on various makes and models of autos. The club now has 421 members, an increase from 262 in May.

Stevens-Duryea Wins Prize

WILMINGTON, DEL., Oct. 15—In an automobile parade held in Chester, Pa., yesterday in connection with a "buy-at-home week" celebration a Stevens-Duryea car, owned and driven by Charles P. McCoy, of Wilmington, was awarded a silver cup valued at \$100, the first prize, as the handsomest car in line. The machine had been decorated by Mr. McCoy's wife, who used 25,000 paper roses and 300 chrysanthemums.



A good look at Donner Lake from the road that skirts along the side of the mountains.



1911 Model M 6-40 Thomas Flyer which is touring the east on high gear

—J. G. Miller, of Walla Walla, Wash., has the agency for the Elmore car.

—Burton A. Clark, of Boston, has joined the sales force of the E. R. Thomas Motor Branch Company, Boston.

—The White Automobile Company, of Baltimore, Md., has taken on the agency in that city for the Courier car.

—The F. H. Barshar Company, of Seattle, has obtained the agency for the Marion car in Washington, Idaho and British Columbia.

—LeRoy Van Patten, until recently with the Hudson Motor Car Company, is now advertising manager of the Alden-Sampson Detroit plant.

—W. H. Barnes, Rapid agent in Seattle, has secured a garage in Tacoma and will establish a resident sales and maintenance force during the next 30 days.

—The Frederick E. Murphy Automobile Company has begun operations at Third street and Third avenue, south, Minneapolis. The company will handle the Mitchell car.

—The Hudson agency in Baltimore, Md., is now in the hands of the Lambert Automobile Company which is also the representative for the Maxwell and National cars.

—The Monitor Automobile Works, of Janesville, Wis., is building three Monitor trucks for exhibition at the Chicago show. A hotel bus, an express wagon and a polished chassis will be shown.

—The Automobile Dealers' Association of Pittsburg has elected the following officers: President, W. N. Murray; vice-president, F. D. Saupp; secretary, Ed. C. McCurdy, and treasurer, G. P. Moore.

—The membership of the Seattle Automobile Club is now close to the five hundred mark, and it is expected that many members will have enrolled by the time when the annual meeting will be held.

—To demonstrate the utility of the Kelsey Motorettes manufactured in Hartford, Conn., by the C. W. Kelsey Manufacturing Company, two of these vehicles are to be sent across the country later in the season.

—The Velie Motor Vehicle Company has closed agencies with J. T. Curtiss & Company, Simsbury, Conn., and Frank E. Vallier, Lynn, Mass., for the right of sale of Velie cars during the season of 1911.

Short News of Interest

—The Goodyear Tire & Rubber Company has opened a branch salesroom in Toledo. The new concern is located at 909 Jefferson avenue, and will carry a complete line of automobile, motorcycle and bicycle tires.

—The capital stock of the Alton Motor Accessory Company, of Akron, Ohio, has been increased from \$50,000 to \$100,000, to provide for additional facilities in the plant. The plant is located on South street, Akron.

—The big garage and salesrooms at 310 Pike street, Seattle, are now occupied by W. H. Barnes, northwestern dealer for the Rapid Motor Vehicle Company, of Pontiac, Mich. A complete machine shop has been installed.

—An addition is being erected to the Empire factory in Indianapolis. The new building will have facilities for testing a number of completed chassis and will also be used for final assembling work and as a repository.

—John C. Speir has been appointed superintendent of the mechanical department of the Pennsylvania Auto Motor Com-



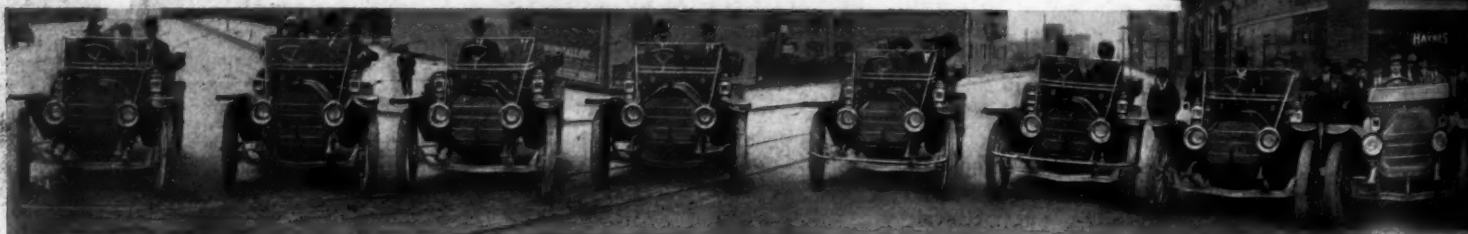
Rambler "Hurry-Up" wagon recently purchased by the city of Sacramento, Cal.

pany, Bryn Mawr, Pa., makers of the Pennsylvania car. Mr. Speir will assume control immediately.

—The Velie 40 has made its appearance in Portland, Ore. The John Deere Plow Company will distribute the line of automobiles in the Northwest, with headquarters at Portland. J. A. Crittenden is manager of the new branch.

—Hartford, Conn., is to have another show probably the last week in February, though the date has not been definitely determined. The attraction will be run under the auspices of the Hartford Automobile Dealers' Association.

—The George M. Merrill Automobile Company, of Spokane, Wash., have secured the agency for the Thomas Flyer for that territory, and will handle this car at 111 Pacific avenue.



Panoramic view of the gathering of San Franciscan owners of Haynes cars on the occasion of the opening of the new

BRIEF ITEMS CULLED HERE AND THERE FOR
QUICK READING—INTERESTING ALIKE TO MAKER
AND USER

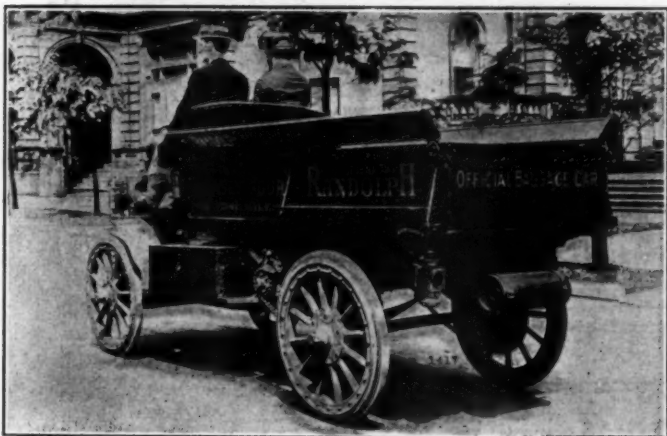
—Sam Beck, one of the oldest automobile salesmen in Minneapolis in point of service, has become identified with the Studebaker branch, caring for the retail trade. Mr. Beck was formerly identified with the Fawkes Auto Company.

—Foster & Company, agents for the Regal and Rambler, have left Automobile row on Allyn street, Hartford, Conn., and have moved into a new one-story brick garage at No. 19 Hoadley place, which is provided with an up-to-date equipment.

—Articles of incorporation have been issued to the Dusseau Fore & Rear Drive Auto Company, of Toledo. The concern has a capital stock of \$100,000. The incorporators are: S. V. Dusseau, A. J. Marleau, E. F. Cousino and Martin Christy.

—The J. I. Case Threshing Machine Company, of Racine, Wis., will add a roadster to its line of Case cars, manufactured by the Pierce Motor Company, of Racine. It will have the same chassis as the regular model. The motor department is working overtime.

—The Enterprise Brass & Plating Company, of Cincinnati, was

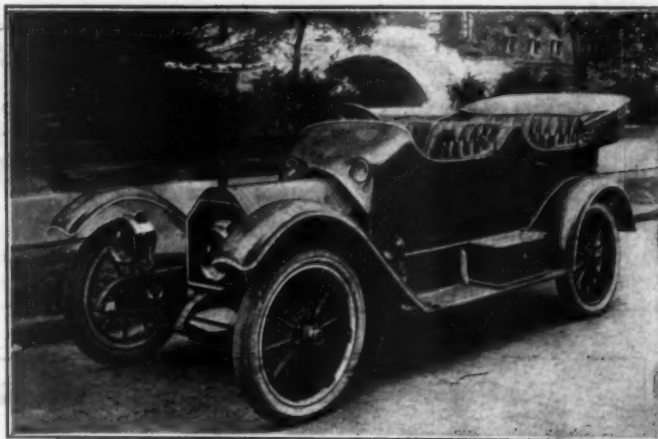


Strenuous Randolph truck which carried the baggage of the Munsey Tourists

incorporated with an authorized capital of \$25,000 to manufacture and sell automobile mountings and supplies by M. Charles Weiglein, C. J. Peimekamp, George Apple, Caroline Apple and M. C. Weiglein.

—On page 519 of the issue of September 29th we stated that the magneto used on the Cole car in the Massapequa Sweepstakes was a Splitdorf. The Remy Magneto Co. informs us that a Remy was fitted to the Cole "30." It will be recalled that that car finished first in the race.

—The Bretton Hall garage has been recently opened at 150-156 West Eighty-third street, New York City. The building is commodious and is equipped with modern conveniences and requisites for storage, care and repair work.



15-30 h. p. Stearns, with unique Dolphin body designed by J. E. Demar & Co.

—Notices have been sent out for a special stockholders meeting of the Royal Rubber Company, of Akron, to be held October 22, at which time the proposition to increase the capital stock of the corporation from \$50,000 to \$200,000 will be acted on. T. Oscar Evans is secretary of the company.

—The Stoddard-Dayton car will be handled exclusively in Baltimore, Md., by the Stoddard-Dayton Automobile Company, of Baltimore, Leo H. Shaab, manager. Mr. Shaab formerly held several agencies under the firm name of the Shaab Automobile Company, including the Stoddard-Dayton.

—The Flash Manufacturing Company, of Zanesville, recently incorporated, is preparing to establish a plant for the manufacture of a compound for the cleaning of automobile cylinders and gasoline engines. E. B. Roemer, John Rowe, H. F. Achauer, Alva Rea and Stephen Mills, Jr., are the incorporators.

—The Empire Tire Company, of Trenton, N. J., has made a number of improvements and additions to its plant. A second story has been put on the office building, three stories on the shipping and stock departments, and a third story on the mill building. A six-car garage has been added also.

—A contract has been closed by the Owen Motor Car Company with C. R. Teaboldt & Company, of New York City, who will have Greater New York and several counties in the immediate vicinity of the metropolis. Teaboldt & Company will shortly occupy permanent quarters at 1597 Broadway.

—Work has been started on the first of three large buildings which will house the Seitz Automobile Transmission Company, in Wyandotte, a down-river suburb of Detroit. The building will have over 40,000 square feet of floor space, and its cost is estimated at \$60,000.

—The Brush runabout is now represented in Boston by a branch instead of an agency, and F. Carleton Dole, formerly manager of the Royal Tourist branch, is manager of the Brush. Archie MacLachlan, manager of the Chicago branch of the Royal Tourist, went to Boston to take Mr. Dole's place.

—The following have been elected as new members in the Automobile Trade Credit Association: Connecticut Telegraph & Electric Company, Fletcher & Company, L. V. Gibbes Machinery Company, Martin-Evans Company, Morrison-Ricker Manufacturing Company, The Sireno Company, Smith Haines, Wenz Ludy Equipment Company.



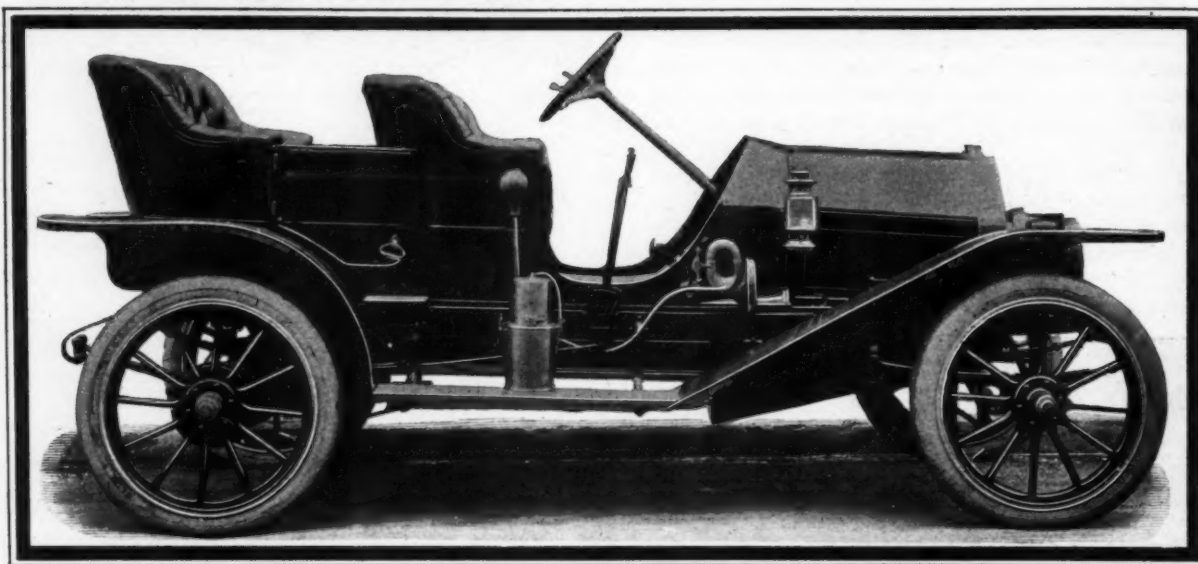
quarters of the Haynes Auto Sales Company at Van Ness avenue and Hess street, San Francisco, California

Among the Agencies

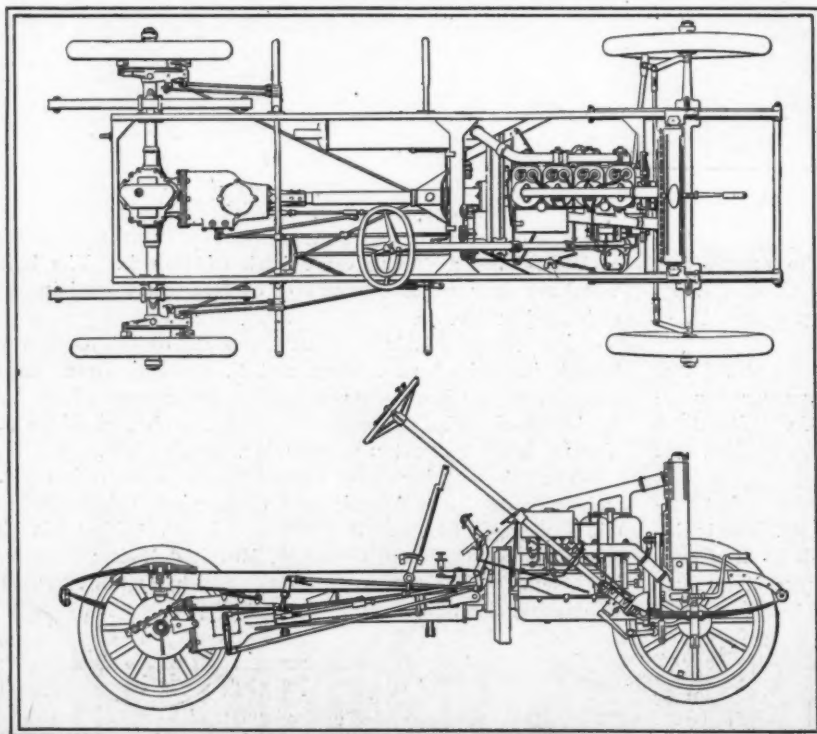
WILLYS-OVERLAND COMPANY HAS INTRODUCED A NEW MODEL, NO. 47, A LOW-PRICED DEMI-TONNEAU WITH A 19.6-HORSEPOWER MOTOR (A.L.A.M.)—OTHER AGENCY NEWS

THE Overland Sales Agency, 1657 Broadway, New York, has just received from the factory of the Willys-Overland Co., at Toledo, a new model which will be known as Model 47. As will be seen from the illustration the body is of the demi-

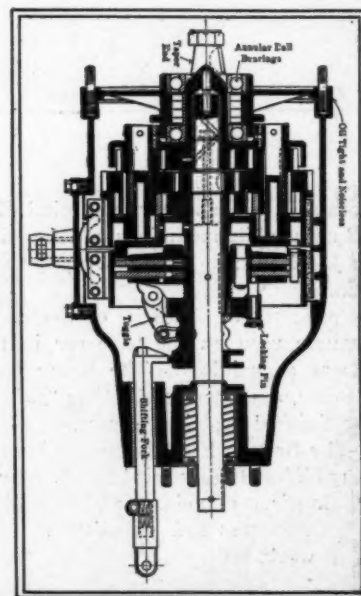
semi-elliptic and the rear springs of similar dimensions but full-elliptic. The front axle is a stout drop-forging of I-section and the steering of the irreversible worm-and-sector type with ample lock for turning in narrow spaces.



Overland Model 47. Demi-Tonneau



Plan and Side Elevation of Model 47
Overland Chassis



Section View of
Planetary Gear

tonneau type, comfortably upholstered, and has a seating capacity for four persons. The standard color is dark blue throughout, and the general appearance is very pleasing. Particular attention has been paid to springing, the front springs being 1 3-4-inch

The engine has a bore of 3 1-2 inches and a 4 1-2-inch stroke; double ignition by means of Remy magneto and dry cells and coil is employed, and the cooling is effected by a thermo-syphon through a vertical tube radiator, cooled by a belt-driven fan.

Multiple-disc clutch is used to transmit the engine power to the gears, which are of the planetary type, giving two speeds forward and reverse operated by foot pedals; the low gear and the reverse being operated by the same pedal. The gear and rear construction are in the same housing, the rear axle being of the semi-floating type.

Two independent sets of brakes are fitted and operate on the rear wheel hubs, the internal-expansion set being actuated by a lever placed convenient to the driver's right hand and the external-contraction set by a pedal. The wheelbase of the car is 102 inches and the tread can be 56 or 60 inches at the option of the purchaser; the wheels are of the artillery type, and 32 x 3 1-2 tires are fitted to all wheels.

Included in the price of the car, which is \$900 f. o. b. factory, are two gas lamps and generator, two side and rear lamps, as well as a good kit of tools and a pump.

Many New Agencies are Being Established

—J. I. Daniel, a well-known Spokaneite, has taken the agency for the Velie car in that city.

—Dr. F. M. White, of Klamath Falls, Ore., now has the agency for the Cole "30" in that section.

—The Gilbert & Vaughn Implement Company, of Hood River, Ore., has taken the Chalmers agency for that section.

—The Pacific Motor Car Company, of Tacoma, the past week took over the Overland agency, formerly handled by the Avenue Garage of that city.

—The United Automobile Company, of Portland, who handles the Maxwell car, have recently established agencies at Eugene, Medford, Ashland and Roseburg, Ore.

—Kaufmann Bros. have secured the agency for the Pittsburg territory for the Imperial tires made by the McGraw Tire Rubber Company, of East Palestine, Ohio.

—Wilson & Maurer are now acting as agents for the Buick line at Salem, Ore. They now have under construction in that city a thoroughly modern and up-to-date garage.

—The Columbia Garage, Spokane, of which Hodgkins & Fosdeck are agents, have been allowed 150 Chalmers for their territory of the 1911 cars. One hundred and twenty-five of these will be 30's and twenty-five of them 40's.

—W. S. Dulmage, sales manager of the Studebaker Brothers Company auto department, of Portland, has resigned to take over the agency for the Elmore car for Oregon.

—The W. King Smith Company is now handling the National and Matheson cars and the Gramm motor truck, and is removing from 109 South State street to the corner of West Willow and North Clinton streets, Syracuse.

—T. J. Toner, head of the Motor Car Maintenance Company, New York, who handles the Grabowsky power wagons, has entered two trucks for the New York *American* commercial vehicle contest to be held October 28 and 29.

—Carl Wallerich, formerly connected with the Overland Company at Indianapolis, and later sales manager for the Haynes Company of Kokomo, has again joined the Overland selling force. He has accepted a position as special agent with headquarters at Toledo, Ohio.

—The Metropolitan Motor Car Company, of Seattle, was last week made the Oregon and Washington Agency for the Alco car. C. S. Cummings, manager of the Metropolitan Motor Car Company, will have the agency for the entire line including taxicabs, touring and racing cars.

The Siegmund-Baylies Company, on Wabash avenue, Chicago, who have had the exclusive agency for the Rapid trucks for the past three years, have taken over the Reliance heavy-duty trucks. A new \$75,000 commercial car garage and salesroom for the combined lines is in the course of construction and will be ready for occupancy about December 1.

—The Tip-Top Motor Car Company, of Hood River, Ore., is a recently organized firm to handle the Maxwell car in that vicinity, and the Lozier car in Oregon and Washington. Capt. C. P. McCan and W. T. Sleddon are the owners of the new concern. One of the many innovations introduced by Capt. McCan is the operating of a 5-8 mile track, where each purchaser of an automobile will be taught to run his car.

—During the past month an amalgamation of the Rapid and Reliance selling agencies in Kansas City has been perfected. H. C. and H. G. Shimp, formerly of the Kansas City Rapid Motor & Transportation Company, and Estell Scott, representing the Reliance Motor Truck Company, have joined forces in a new selling organization, to be known as the Rapid-Reliance Company of Kansas City.

—The Syracuse Automobile Dealers' Association has just elected John H. Valentine, president of The John H. Valentine Company, as its treasurer to succeed Harry L. Conde. The association's other officers are: C. Arthur Benjamin, president; M. W. Kerr, vice-president; George E. Messer, secretary. The organization is already busying itself with plans for its third annual show, which will be held in the Armory next March.

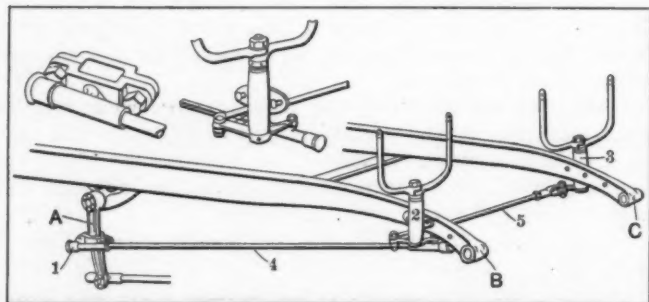


Gathering of the New York and Philadelphia selling organization of Gibney & Brother at the Marlborough-Blenheim, Atlantic City

Prominent Automobile Accessories

FOCUSES THE RIGHT SPOT

Every autoist knows the difficulty encountered in driving at night, round corners, as the rays thrown by the headlights



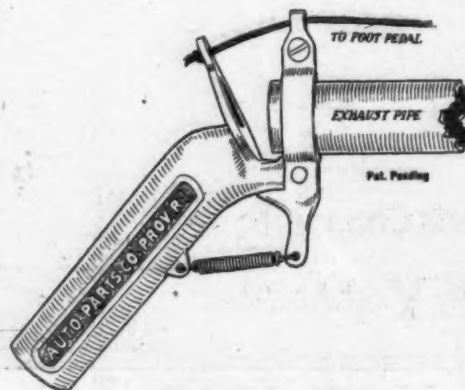
Individual view of the different parts of the headlight

illuminate at the opposite angle to which one is about to turn. A car fitted with the Au-Beuf brackets has its way lighted before the turn is taken, the action of the steering arm operating the brackets carrying the headlights. They can be fitted to any car, as when the equipment is sent out from the factory the bracket holders 2 and 3 are undrilled so that they can be placed in any position desired; the rod 4 is only threaded at one end and this, too, can be adapted to the requirements of any car.

Ball and socket joints with inside spring are fitted to prevent all road shocks from being imparted to the lamps, and these are made adjustable for wear to be taken up from time to time. The brackets are made to accommodate any lamp up to 9 1-2 inches. The equipment is manufactured by F. H. Au Beuf Co., Oneida, N. Y., and the price in black enamel is \$25 per set.

EXHAUST WHISTLE FOR AUTOISTS

The new exhaust whistle that is being turned out by the Auto Parts Co., of Providence, R. I., is so clearly depicted as to demand almost no further reference, but it is pointed out that the method of attaching the same should prove of interest in view of the fact that the fine work that this whistle is designed to do is not

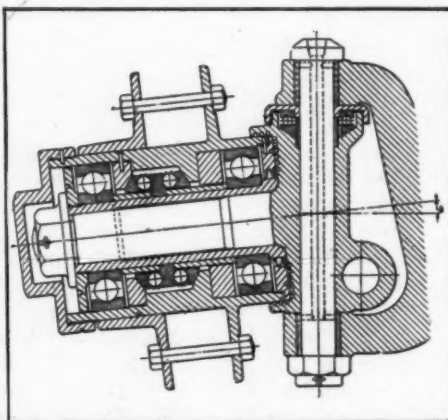


Signaling with the exhaust

hampered by difficulty in attaching the same to any make of automobile. This device is designed to warn the occupants of the highway of the approach of the automobile that has it for a part of its equipment, and, while the whistle is not intended to convey music, it is, nevertheless, a capable warning device. The design is such that clogging up is not to be considered, and back pressure is eliminated. The price of this device is \$3.50 through dealers or direct from the maker.

HESS-BRIGHT HUB BEARINGS

The strains and stresses imposed on the bearings of a heavy 3 1-2 to 5-ton truck are different from those on a touring car in



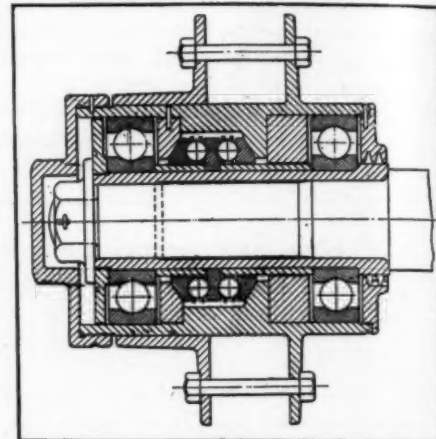
Front axle hub, showing Hess-Bright method of fixing radial and torsion bearings

so far that the super weight is more and center of gravity is often considerably higher. The Hess-Bright Manufacturing Co. has designed a hub to be used for either front or rear wheel that takes all radial loads and side thrusts.

Both radial and thrust bearings are mounted on a sleeve inside of the hub; the inner races of the radial bearings and the center plate of the thrust bearings are clamped between the large flat nut, distance bushes and a shoulder on the sleeve.

The wheel may be slipped off or on in the same manner as a plain spindle bearing without expos-

ing the ball bearings to the surrounding dirt and grit while handling the wheel and without loss of lubrication or need of recharging. Taking into consideration the

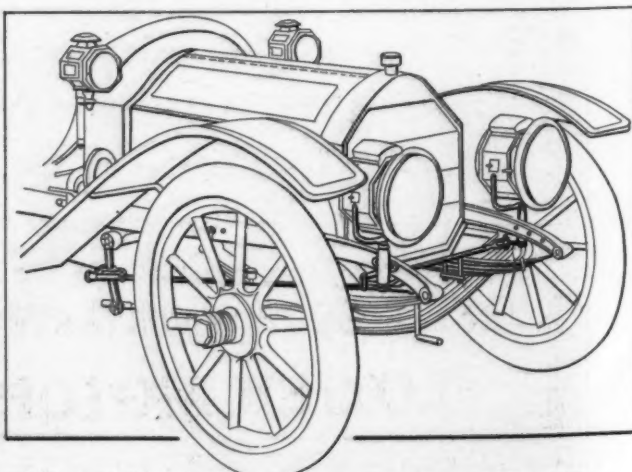


Rear axle hub, showing Hess-Bright method of fixing radial and torsion bearings

conditions of unskilled and rough labor incidental to truck operations this feature is an advantage.

The sleeve is secured to the axle by a hexagon nut, which is large enough to act as a locknut for the spindle end nut. A loose floating bush having a running fit is inserted between the inner radial and the thrust bearings. Protection from water and dirt is obtained by recessing the hub, and cutting a series of grooves which are filled with grease before the wheel is slipped on.

The use of the ball thrust bearing in the pivot assures greater ease in steering and in heavy truck work this is very tiring. It will be noticed that the dish of the front wheels is 6 per cent., whereas the customary allowance for touring cars is somewhat less. The easing up of the labor of steering big commercial vehicles will result in satisfied operators and in more work.



Au Beuf automatic headlight brackets for automobiles—headlights controlled by the steering wheel